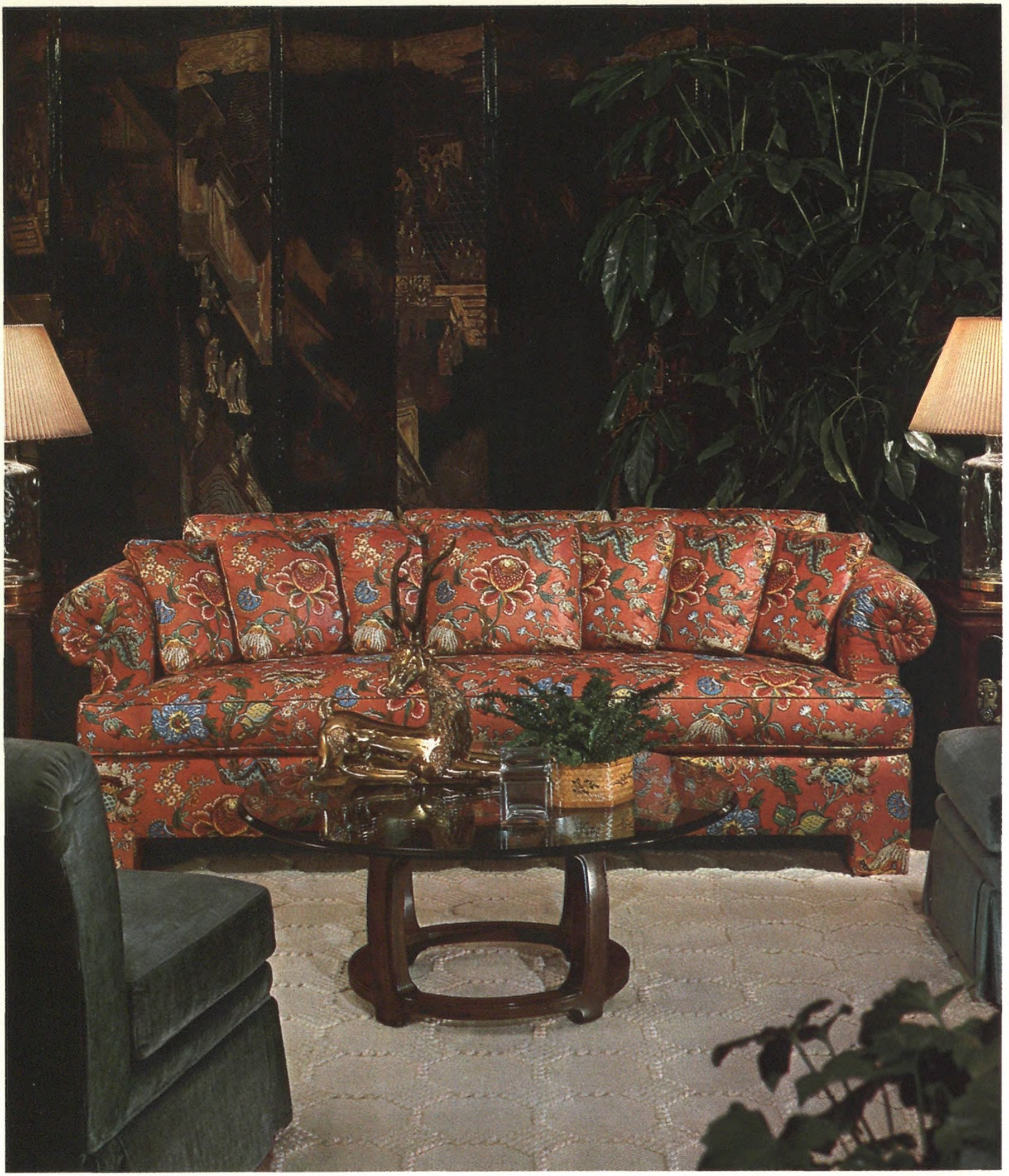
February 1979

Smithsonian

The zany—and informative—
era of the stereograph (p. 88)



Henredon and Clarence House. For those who appreciate excellence.

Good design, meticulous tailoring and superior construction have made Henredon a standard of quality for many years. Elegant drawings, subtle colorations and finesse of execution have made hand screened prints from Clarence House a criterion of fabric excellence. The exceptional craftsmanship of Henredon and the uniqueness of these fabrics combine to create seating pieces of true distinction—now being featured in many fine stores. For the name of the one nearest you and an Upholstered Furniture brochure, send $2.00 to Henredon, Dept. S-29, Morganton, NC 28655.

Henredon

WHAT "STICKER PRICES" REALLY MEAN

HOW TO GET THE BEST BUY ON THE CAR THAT'S BEST FOR YOU.

Every GM dealer is an independent businessman. No one can tell him what to charge. Not the government, and not the manufacturer.

But the government can and does require that manufacturers post a suggested retail price, or "sticker price," on every new car we build. It's a good idea, because it makes it easier for you to compare one car against another.

Remember, the "sticker price" is only the suggested price. The actual selling price may be different. That's because the law of supply and demand affects the prices of cars, just as it affects most other prices. And market conditions change all the time.

For example: a very popular model may sell at the suggested price, but frequently cars will sell for less, because the automobile business is highly competitive.

The difference between the "sticker price" and the wholesale price—that's what the dealer pays us—is called the markup, or dealer's discount. This changes from time to time, but as a general rule the markup on small cars is lower than on full-size cars.

The dealer's markup helps to pay his rent, taxes, salaries, utility bills—all that it costs to run a business. And he also has to make a profit, or he can't stay in business. Last year, GM dealers reported about two cents profit on each dollar of sales. As you can see, competition doesn't leave the average dealer a very big margin of profit.

You can affect the price you pay. It depends on the marketplace, for one thing. You may get a bigger break if you choose a slower-selling model or a car the dealer already has in stock. The latest sales figures published in many newspapers will give you some idea of how cars are selling, although the demand for a particular model may be greater or less in your area.

How much optional equipment you order on your car also makes a big difference in its price. Go over the list carefully, and equip the car just the way you want it. Then it will have most value for you, and you'll enjoy it more. You shouldn't buy what you won't use, although much of the equipment you add to your new car will make it worth more when you decide it's time to trade it in.

Most buyers trade in a used car when they buy a new one. And the value of used cars varies according to demand as well as to their condition. Performance and appearance count, so it's a good idea to maintain your car and keep it clean. The more you can get for your old car, the less will be your out-of-pocket cost to replace it with a new one.

But whichever car you choose, the price should never be your only consideration. The dealer's reputation and his service capability are also important.

Our interest is in helping both you and the dealer to get a fair deal. We want you to be satisfied with your car. That's good for you, good for the dealer, and good for us.

This advertisement is part of our continuing effort to give customers useful information about their cars and trucks and the company that builds them.

General Motors

People building transportation to serve people

With nearly everything going up, it's good to know that one thing is still a bargain.

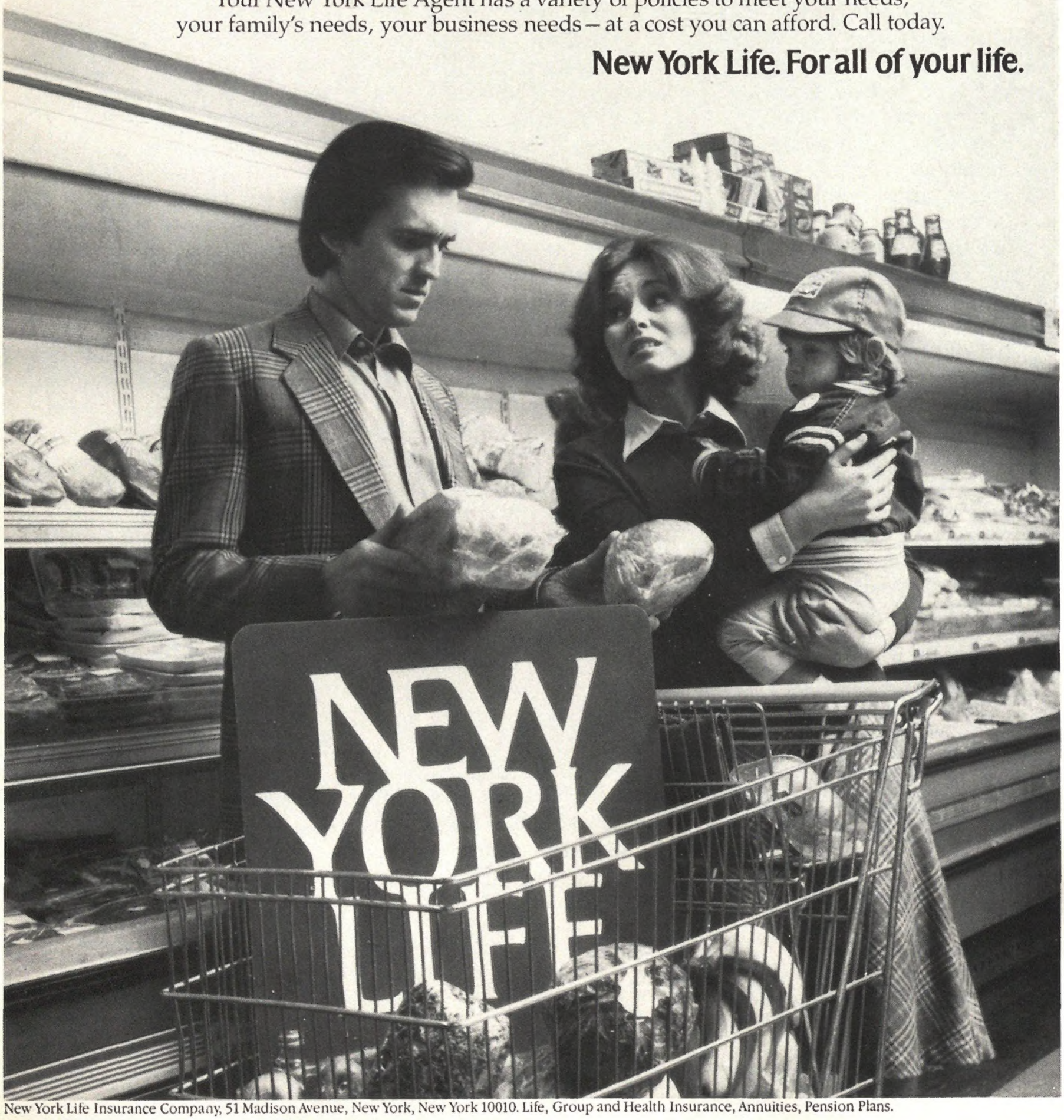
That bargain is New York Life insurance.

The fact is, a dollar's worth of New York Life insurance costs about the same today as it did ten years ago – remarkable in a time of continuing inflation.

Of course, your income and standard of living have risen over the years. That means you probably need *more* protection. But life insurance remains the best way – usually the only way – to give your family real financial security.

Your New York Life Agent has a variety of policies to meet your needs, your family's needs, your business needs – at a cost you can afford. Call today.

New York Life. For all of your life.



New York Life Insurance Company, 51 Madison Avenue, New York, New York 10010. Life, Group and Health Insurance, Annuities, Pension Plans.

SECRETARY OF THE
SMITHSONIAN INSTITUTION:
S. Dillon Ripley

EDITOR AND PUBLISHER:
Edward K. Thompson

EXECUTIVE EDITORS:
Ralph Backlund
Don Moser

BOARD OF EDITORS:
Grayce P. Northcross
Edwards Park
Bennett Schiff
Paul Trachtman
John P. Wiley jr.
Richard L. Williams

PICTURE ASSOCIATE:
Caroline Despard

ASSOCIATE EDITORS:
Marlane A. Liddell
Dana Little
Dee McRae
Jane D. Scholl
Nancy Seaman

ASSISTANT EDITORS:
Michelle I. Galler
Bonnie Bilyeu Gordon
Joyce McCarten
Carol Simons

EDITORIAL ASSISTANT:
Edgar Rich

ASSOCIATE PUBLISHER:
Joseph J. Bonsignore
Production:
Nannie Shanahan
Business:
Carey O. Randall

ADVERTISING DIRECTOR:
Thomas H. Black

CIRCULATION-PROMOTION
DIRECTOR:
Anne Keating

Smithsonian is published monthly by the
Smithsonian Associates,
900 Jefferson Drive,
Washington, D.C. 20560.
© Smithsonian Institution 1979.
All rights reserved.
Reproduction in whole or in part
without permission is prohibited.
Subscription price $12 a year in U.S.
and possessions, $15.50 elsewhere.
Single copy price $1.25.
Second-class postage paid at
Washington, D.C.
Editorial offices, 900 Jefferson Drive,
Washington, D.C. 20560.
Advertising and circulation offices at
420 Lexington Ave.,
New York, New York 10017.
Please address all
subscription correspondence
and change of address information to
P.O. Box 2955, Boulder, Colo. 80322

February 1979

Smithsonian

Volume 9, Number 11

Table of Contents

COVER: Golfer gone berserk is one of the comic stereographs that brought laughs to bygone generations (p. 88)

10 The view from the castle

14 Letters to the Editor

27 Phenomena, comment and notes by Don Moser

32 Around the Mall and beyond by Edwards Park

40 Picture credits

42 Carthage *was* destroyed but a multinational effort has started to reveal 14 centuries of its history
By Dora Jane Hamblin, color photographs by Ralph Crane

56 A federal judge rules on century-old treaties, renews "war" between Indian, non-Indian salmon fishermen
By Michael Parfit, color photographs by Charles Rotkin

68 How Albert Einstein, a gentle, modest genius born 100 years ago, found sanctuary and inspiration in Princeton
By Lincoln Barnett

80 At the Corcoran Gallery, a small but stunning Biennial presents work of five top American painters
By Benjamin Forgey, photographs by Arnold Newman, Yale Joel and Flip Schulke

88 Tantalizing glimpses of world's biggest stereograph collection at University of California, Riverdale
By Jack Harrison Pollack

96 Some architects and their patrons find building down, not up, can be pleasant, cosy and energy-saving
By David Martindale

106 An ad agency president's butterfly nursery
Photographs by Peter B. Kaplan

110 Robert Tatin—artist, fantasist, visionary—revels in museum built with his own, and his wife's, hands
By Rudolph Chelminski, photographs by Dmitri Kessel

119 With help from vertebrate and invertebrate friends, angiosperms reward them (and us) with lovely blossoms
By Mary Louise Grossman, photographs by Shelly Grossman

132 Book reviews

140 Additional reading

144 February events at the Smithsonian

148 Smithsonian tours

151 State of the Smithsonian: the Secretary's annual report
By S. Dillon Ripley

156 Where's the fire? Let's hope at a bus stop
By Patrick Ryan

"CERTAINLY IT'S THE BEST EUROPE IN A LONG WHILE."

*The sedan that Road Test Magazine is talking about does not sell for $20,000. It does not sell for $15,000. It sells for a base price of $8995:**

This pleasantly surprising contradiction between the test results of the Audi 5000 and the price has been pointed out by several automotive publications.

Read these excerpts from the Road Test report on the Audi 5000 that appeared in the January, 1978 issue:

"At freeway speeds the ride is serene and smooth, there is no mechanical noise, and no wind noise. You get bored, turn on the radio, and just drive—until you glance down at the gauges and notice that you're making 85 mph. It's sneaky; it'll fool you if you don't pay attention. It'll also nip in and out of traffic like a much smaller car, thanks to the way it responds to its controls..."

"It may just be the ultimate sports sedan."

"...not only does the 5000 have a 5-cylindered mill, but it's got one that sips gas like a four,** makes horse-

*Suggested retail price $8995 P.O.E. Transportation, local taxes and dealer delivery charges additional. Fully equipped "S" model $10,575.

SEDAN TO COME FROM

—ROAD TEST MAGAZINE, ON THE AUDI 5000

power like a six and feels nearly as smooth as an eight."

"...the price...isn't near as much as some of the 5000's closest competitors sell for. That, of course, is the name of the game, and Audi is playing it to the hilt with development of solid concept and good attention to detail. They're going to sell every one of these cars they can screw together."

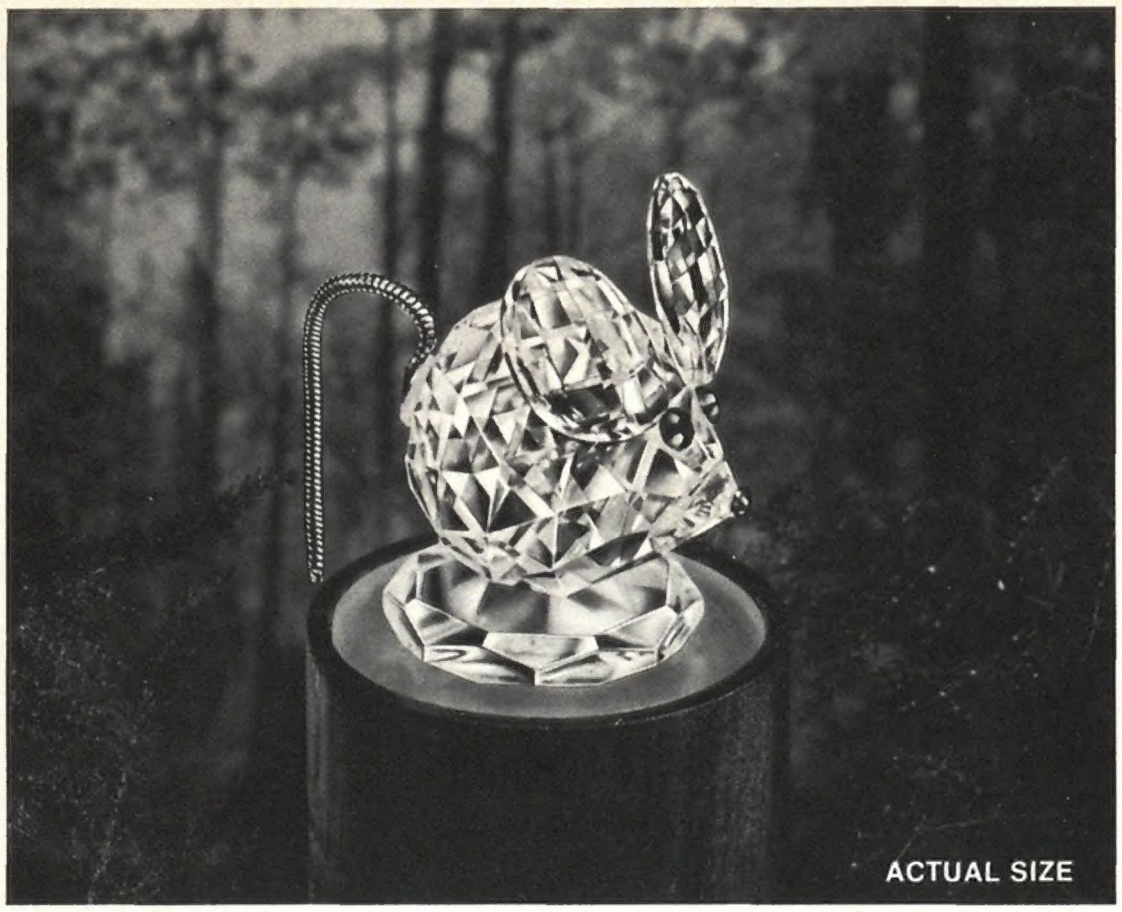
"...the 5000 has an incredible heater/air conditioner that could heat half your house, or could freeze your—um, toes off, depending on which button is pushed."

Test drive the 1979 edition of the Audi 5000 at your Porsche + Audi dealer and see if it isn't so.

**26 mpg highway, 16 mpg city, std. transmission. (EPA estimates. Actual mileage may vary based on how and where you drive, car's condition, and optional equipment.)

PORSCHE+AUDI

Nothing Even Comes Close



From Austria with love...

This gem of a mouse sparkles with the inner fire of faceted full-lead cut crystal

Exclusively yours from The Halls Collection.

Behind those twinkling dark eyes of our charming houseguest is a body of dazzling, diamond-like full lead-crystal. More than a hundred facets scatter a beam of light into fiery droplets of rainbow color that splash on his own mouse-sized mirrored walnut pedestal. An exclusive import from Austria, this is perhaps the finest and most expensively created crystal in the world. But even though your house mouse is a meticulously hand finished gem, it is surprisingly affordable.

Complimentary 2¾" high walnut stand included.

Only **$37.50** each, limit two to a customer.

To order by credit card, phone toll-free 800 821-5462. (Mo. residents, call 800 892-5796.)

The halls Collection
AT CROWN CENTER P.O. BOX 5548, KANSAS CITY, MO. 64109

Please send me (No.)_____ Crystal Mouse Sculpture(s). Enclosed is $37.50* (check or money order—no cash, please) for each Crystal Mouse I have ordered. Total enclosed $_____. I understand that if I am not delighted with my sculpture I may return it in 30 days for a full refund.

I prefer to pay by credit card account:
☐ Master Charge ☐ Visa/BankAmericard
☐ Carte Blanche ☐ American Express

Account No. _____
Expiration Date _____
For Master Charge add the 4 small numbers above your name: _____
Signature _____

Name _____ (PLEASE PRINT)
Address _____
City _____ State _____ Zip _____
Phone: ( ) _____ AREA
*Please add any applicable state or local taxes.

1200029
310200

Smithsonian

Board of Regents, Smithsonian Institution

Ex Officio

Chief Justice of the United States
Warren E. Burger, Chancellor
Vice President of the United States
Walter F. Mondale

Appointed by the President of the Senate

Honorable Barry M. Goldwater
Honorable Henry M. Jackson
Honorable Robert B. Morgan

Appointed by the Speaker of the House

Honorable Elford A. Cederberg
Honorable George H. Mahon

Appointed by Joint Resolution of Congress

Honorable Anne Armstrong
Mr. John Paul Austin
Dr. John Nicholas Brown
Dr. Murray Gell-Mann
Dr. William A. M. Burden
Dr. Caryl P. Haskins
Honorable A. Leon Higginbotham jr.
Mr. Thomas J. Watson jr.
Mr. James E. Webb

National Board of the Smithsonian Associates

Mr. William S. Anderson, Chairman
Mr. Robert H. B. Baldwin
Mr. Henry C. Beck jr.
Mr. Nicholas F. Brady
Mr. Keith S. Brown
Mrs. Jackson Burke
Honorable William T. Coleman jr.
Mr. E. Mandell deWindt
Mr. Gaylord Donnelley
Mr. James A. Elkins jr.
Mr. Thomas M. Evans
Mrs. Karl G. Harr jr.
Honorable John N. Irwin II
Mr. James M. Kemper jr.
Mrs. Robert A. Magowan
Mr. Scott McVay
Mr. John R. Norton III
Mr. George S. Pillsbury
Mr. Arthur A. Seeligson jr.
Mr. David E. Skinner
Mr. Vernon Taylor jr.

Honorary Members

Mr. Richard P. Cooley
Mr. Joseph F. Cullman III
Honorable Leonard K. Firestone
Mr. Alfred C. Glassell jr.
Mr. William A. Hewitt
Mrs. Lyndon B. Johnson
Mr. Lewis A. Lapham
Honorable George C. McGhee
Honorable Nelson A. Rockefeller
Mr. Francis C. Rooney jr.
Mr. Merritt Kirk Ruddock
Mr. Thomas J. Watson jr.

Six million people go to Europe every year.
42,000 do it well.

Sail the incomparable QE2 to or from Europe this year, and we'll give you a free economy air ticket on British Airways to or from your hometown.

By including the Queen in your European vacation plans, you'll also get five days filled with luxury and pleasure, excitement and relaxation, because the Queen offers the good life: world famous cuisine and wines, internationally acclaimed entertainers, impeccable British service, nightclubs, bars, swimming pools, a theater, a shopping arcade, dozens of activities, and a Festival of Life program featuring movie stars, public figures and authors.

Air/sea prices are $775 to $3,695 per person, double occupancy.* Or, you can have an extraordinary 8- to 35-day European tour including the Queen... all for the price of an ordinary tour.

This year, choose one of the Queen's 26 sailings to or from Europe and fly the other way free. See your travel agent or call Cunard at (212) 661-7777.

*Length-of-stay and maximum air allowance restrictions apply.

CUNARD
Queen Elizabeth 2
British registry

Cunard, P.O. Box 999
Farmingdale, N.Y. 11737

Please send more facts on the QE 2 experience and Europe. E170609Q81

☐ QE 2 transatlantic air/sea booklet
☐ QE 2 European tours booklet

Name_____

Address_____

City_____ State_____ Zip____

My Travel Agent is_____

For once in your life, live.

One of the biggest gold strikes since Sutter's Mill.

The yield: 3,000 pounds of pure gold.

But it didn't come from a mine. It came from a Western Electric factory.

A new kind of Midas Touch

That's where Western Electric's new process for plating gold is *conserving* the precious metal, through increased efficiency and precision. It's producing better switching components for the Bell System, to make your phone service clearer and more reliable than ever.

It must be gold that's plated to the switching components you see glittering in the photograph, because no other metal can provide the same kind of efficient, reliable, durable, and clear telephone transmission.

But until now, gold-plating had always been a messy and imprecise process. There had been no way to control it accurately. No way to avoid depositing excess gold on the places it was intended to go. And on the places it wasn't.

So Western Electric, working with Bell Labs, designed a totally new system to do the job. Combining the best of electro-chemical and programmed logic control technologies, the new system can plate gold with hair-thin precision. Depositing only the desired amount, only on the designated spot. With no waste whatsoever.

Gilt-edged savings

Besides producing a much better product, Western Electric has mined a savings of $9 million from the process. And that's another way we're helping your Bell Telephone Company hold down the cost of your phone service.

Even bigger benefits

And since the new process uses 55% less gold than the old one, we could more than double production of our improved switching component. Without consuming any more of the shiny natural resource.

But there are more environmental plusses. The new process has almost completely eliminated the gaseous wastes plating used to produce. It's cut the liquid wastes by 90%. And it runs on 67% less power.

This improved gold-plating technique is another way Western Electric is working to hold down the cost, while continually raising the quality of your phone service.

Keeping your communications system the best in the world.

Western Electric

Secretary Ripley's comments

The view from the castle

We mark the passing of our sixth Secretary, who left to this Institution a legacy of dedicated scholarship and solid achievement

It was my privilege to have been, twice over, a colleague of Alexander Wetmore—as an ornithologist and as Secretary of the Smithsonian Institution. Dr. Wetmore, who died last December 7 at 92, was a scholar of inspired interests; a proud man with a gift of humility and compassion. He brought to his work and to this Institution a sense of dignity and of achievement that are his legacy to us as much as the more tangible birds and books that abound in our Natural History Museum.

Dr. Wetmore was the sixth Secretary of the Smithsonian. As he himself said in the annual report of the Institution for 1945: "I assumed the Secretaryship in the midst of the trying times of World War II. A large proportion of the Institution's normal activities in research, exploration and publication had been suspended so that the staff could devote itself to aiding the Army and Navy in the prosecution of the war."

In 1952 Dr. Wetmore retired as Secretary, having served through the war years of straitened circumstances. He returned to his primary love of research as a collaborator and research associate in biology, confident that he had placed the Institution once again into the growing world of understanding of the central role of science in our government affairs. All this time, besides, he was to serve two cognate organizations that he loved: as home secretary from 1951 to 1955 of our close friend, the National Academy of Sciences, and from 1933 to 1976 as an active trustee of the National Geographic Society.

Dr. Wetmore's Smithsonian career had begun some two-score years earlier, in 1924, when he joined the Institution as superintendent of the National Zoo. Less than a year later, he became Assistant Secretary and director of the U.S. National Museum. It was not to end until December 1978. A museum man, he was also a man of the world of birds, and he served both with a devotion that is remarkable. In his career he described 189 new species and subspecies of birds. His collections of eggs, skeletons, fossils—gathered and documented with meticulous care—form a resource which would be impossible to duplicate today. His colleagues remember him, perched atop mountains or observing a clearing, carefully recording his observations in notes that have proved to be nearly publishable in their original form.

Among a host of publications, the three volumes published during his lifetime, *The Birds of the Republic of Panama,* are the finest ever written on the birds of that nation. He pursued this work, his last, until a year or so before his death. A fourth volume will be published in the near future, thanks to the efforts of Smithsonian colleagues.

Alexander Wetmore enriched this Institution and the lives of those who knew him; in remote villages of Panama he is still remembered as "Señor Alejandro" by natives who had been captivated by his charm many years earlier.

The Smithsonian is a rare place that clings to its memories of the wonderful people who helped to build and shape it—none more so than Alex Wetmore. He lived in the "traditions of civility." He has gone from us in the accomplishment of grace.

S. Dillon Ripley

The most significant luxury car introduced this decade.

Seville . . . the first American car to combine international size and timeless styling with Cadillac comfort and convenience. The first luxury car anywhere to offer the choice of either the standard 5.7 litre EFI engine or the available 5.7 litre diesel V8. (Seville is equipped with GM-built engines produced by various GM Divisions. See your Cadillac dealer for details.) Seville is also first to offer Trip Computer . . . for vital trip information. More Americans have chosen to own Seville than any luxury import model. Now, for 1979 . . . the significance of Seville. The craftsmanship of Cadillac. The luxury car of the decade. At your Cadillac dealer.

SOME OF THE MOST BEAUTIFUL SCENERY IN NORTH CAROLINA IS INDOORS.

The outdoor beauty of North Carolina is legendary.

Mountains a mile high. Beaches that seem a mile wide. The stuff dream vacations are made of.

But into each vacation, there's a chance that a little rain may fall.

And that's when you'll discover that North Carolina's beauty isn't just on the outside.

Indoors, the sun always shines. From the canvases of painters like Frieseke and Renoir.

You can see the same scenery Monet saw. And flowers created not by nature, but by Picasso.

You can see bones of dinosaurs and great blue whales. Live sea turtles and octopuses. Weathered figureheads from sailing ships.

Things well worth seeing, even when the sun is shining.

You can visit the homes of the famous. Carl Sandburg. Thomas Wolfe. George Vanderbilt. Andrew Johnson.

And the homes of the not-so-famous. In historic cities like Wilmington, Edenton, Beaufort, and the restored Moravian village of Old Salem.

You can watch a pot emerge from a lump of clay. Or a sea bird from a wedge of wood. Or a length of fine cloth from a tangle of rough, raw wool.

And, if you're near a city or college town, the evening's entertainment could range from a world-famous rock star to a Broadway musical.

So, once you see North Carolina outdoors, see North Carolina indoors. If you don't, you could miss some of the most beautiful scenery of all.

For more information about North Carolina, and a package of free booklets to help you plan your next vacation, write North Carolina Travel, Department 198, Raleigh, North Carolina 27699.

NORTH CAROLINA

Please enter a subscription to the following magazine(s)
I understand that initial delivery will take about 6 weeks.
All monthly issues are mailed from Britain.

☐ Illustrated London News (12 monthly issues) $20
☐ Country Life (12 monthly issues) $25
☐ Punch (12 monthly issues) $22

Name of Subscriber_____
Address_____
City/State/Zip_____
Sign Gift Card from_____

☐ check enclosed ☐ Bill me
charge my
☐ Bankamericard/Visa #_____
☐ Mastercharge
_____ (expiration date)

or call toll-free
(800) 621-8318
in Illinois
(800) 972-8308

You don't risk a farthing.
You may cancel your subscription any time and receive a full refund.
SM7

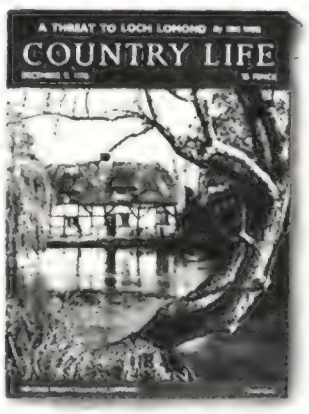
Some interesting foreigners would like to visit your home.

LONDON NEWS

World's most deceptively named magazine. Scarcely limited to illustrations, London, or news. Fascinating articles on history, geography, current affairs, art, you name it...as well as a complete guide to London theater, shopping, events, etc., if you plan to visit this year.

COUNTRY LIFE

England's Country Society magazine. Takes you into Britain's aristocratic world of mansions and gardens, art and antiques, horse and hound. A valuable source of decoration ideas and news of London auctions, art exhibits, and the estate market throughout Britain.



PUNCH

Home of marvelous humorous writing—from the broadest parody to the most understated British humor. Worth the price of admission for the famous cartoons alone. Special bonus: booklet containing facts about, and history of, Punch, including a sprinkling of past cartoons.

U.S. Subscription Center, Inc.®, 8831 Sunset Blvd., Los Angeles, CA. 90069

©1977 U.S.C.C.

Letters to the Editor

Victorian High Renaissance

Dear Sir: In your article in the December issue on late-Victorian artists, I was especially interested in the work of Albert Moore. I understand that three of his small paintings, dated 1875, were almost identical in composition, but completely different in coloring. The one you reproduced, *Beads,* leaves me curious as to why Moore gave it this title.
Elizabeth M. Brown
New York City
He often named his paintings whimsically. In this detail from the lower left-hand corner of the painting (see below) one has to look to find the clue—a string of beads on the floor, alongside a vase and fan. Ed.

Dear Sir: Rarely does a cover have such intensity that it causes one to just sit and stare. The face of the young May Sartoris still lingers in my mind. My first thanks go to artist Frederic Leighton, but the rest of my appreciation goes to SMITHSONIAN.
Cathy Copetas
Pittsburgh

All the riches of Middle-earth.

The Complete Tolkien Library

The Silmarillion edited by Christopher Tolkien • The grand narrative history of the Elder Days of Middle-earth—Tolkien's lifelong labor recounting deeds of valor and treachery during the First Age.
Publisher's list price: $10.95

The Lord of the Rings • Second revised edition with a new foreword and appendixes; maps. 3-volume boxed set. **Publisher's list price: $30**

The Tolkien Companion by J.E.A. Tyler • An invaluable, complete guide through the labyrinth of Middle-earth—a compilation of facts, names, dates, maps, charts, genealogical tables and elvish writing systems.
Publisher's list price: $12.95

The Hobbit (Collector's Edition) • A handsome boxed edition with paintings and drawings by the author. **Publisher's list price: $18.95**

Tolkien: A Biography by Humphrey Carpenter • The only authorized biography; based upon Tolkien's letters, diaries, papers, and memories of family and friends. **Publisher's list price: $10**

All seven beautiful editions for only $12.50 (Save $70.35)

Publishers' list prices total: $82.85

You simply agree to buy four books within a year

Imagine the pleasures of owning the complete Tolkien library—including the current bestseller *The Silmarillion*—all for only $12.50 (plus shipping and handling charges). They can be yours to enjoy as a member of Book-of-the-Month Club.

Bookstore Quality at Book-Club Savings

You conveniently shop at home at considerable savings. Whether you're adding up your remarkable savings on the introductory offer, or on books you are offered as a member, these are always true savings...because every Club book is as good as, or better than, those sold in stores. You never settle for the altered or inferior editions that some book clubs send their members.

Book-Dividends

When you remain a Club member after the trial period, every book you buy earns Book-Dividend® credits. These entitle you to choose from a wide variety of significant books at hard-to-believe savings of *at least 70%*.

Facts About Membership

You receive the *Book-of-the-Month Club News*,® a literary magazine, 15 times a year (about every 3½ weeks). Each issue reviews a *Main Selection* plus scores of Alternates.

If you want the *Main Selection* do nothing. It will be shipped to you automatically. If you want one or more Alternate books—or no book at all—indicate your decision on the reply form always enclosed and return it by the date specified.

Return Privilege. If the *News* is delayed and you receive the *Main Selection* without having had 10 days to notify us, you may return it for credit at our expense.

Cancellations. Your membership is cancelable at any time after you have bought 4 additional books.

BOOK-OF-THE-MONTH CLUB®

AMERICA'S BOOKSTORE® Since 1926, 330 million books in 15 million homes.

Book-of-the-Month Club, Inc. A454-2
Camp Hill, Pennsylvania 17012

Please enroll me as a member of Book-of-the-Month Club and send me the TOLKIEN LIBRARY. Bill me $12.50, plus shipping and handling charges. I agree to buy 4 books during the coming year. A shipping and handling charge is added to each shipment.

Mr.
Mrs. 9-19
Miss (Please print plainly)

Address..... Apt.....

City &.....

State..... Zip.....

Maupintour's

Spain-Portugal

PLUS MOROCCO!

ENCHANTING IBERIA, intriguing North Africa. Castles, chivalry, flamenco, fado. Kasbahs, souks, the Sahara. Superb sightseeing, fine hotels, resorts. Good dining. Comprehensive but unhurried, time for your own adventures. Unique!

HIGHLIGHTS of Iberia in 2 weeks or 3 weeks. Spain or Morocco exclusively, in-depth. Old Castile, Segovia, Palma de Mallorca, Costa del Sol, art treasures, Toledo, 6 escorted tours.

COME JOIN US! Experience these sunny lands. Learn, enjoy. Ask your Travel Agent for Maupintour's *Spain/Portugal* brochure or send coupon.

Maupintour *quality touring since 1951*

Maupintour, 900 Massachusetts St., Lawrence, Kansas 66044. 800/255-4266.

name

address

city

state/zip

travel agent *ssn-mlb*

Ask about these Maupintour escorted holidays:
☐ Alps ☐ E. Africa ☐ Iran ☐ Asia ☐ California
☐ Alaska ☐ Balkans ☐ British Isles ☐ Canada
☐ Black Sea ☐ Turkey ☐ England ☐ Orient
☐ Colorado ☐ Egypt/The Nile ☐ Italy/Sicily
☐ Europe ☐ France ☐ Germany ☐ Guatemala
☐ Greece/Aegean Isles ☐ S. Pacific ☐ Hawaii
☐ Galapagos ☐ Ireland ☐ USSR/East. Europe
☐ Mediterranean cruise ☐ Mexico ☐ Morocco
☐ Middle East ☐ North Cape ☐ South America
☐ USA Rail Tours ☐ India ☐ Spain/Portugal
☐ Red Sea ☐ Scandinavia ☐ Central America

If you're searching for eye-opening adventures in the company of guest experts, renowned specialists in the fields of art, archaeology and botany, SWANS will put the wonders of the world within your reach.

ISN'T THIS THE YEAR YOU PROMISED YOURSELF THE TOUR WITH A DIFFERENCE?

Choose from over 50 Art Treasure and Special Interest tours and cruises, exploring over 60 countries. The pace is unhurried and civilised and you will return with a rewarding, lasting sense of achievement from the exact place you've always wanted to go.

Hellenic Cruises • East African Safaris • Southeast Asia & Far East • India • Central and South America • Persia • North Africa & Middle East • Pakistan & Afghanistan • The British Isles • European Art Treasures • and more . . .

Please contact the General Agent in the U.S. for W.F. & R.K. Swan (Hellenic) Ltd. for free, full-colour descriptive material—

ESPLANADE TOURS

38 Newbury Street, Dept. S, Boston, Massachusetts 02116
Telephone: (617) 266-7465

Dear Sir: The painting, *May Sartoris,* on your cover is indeed a beautiful example of Victorian High Renaissance; however, I note that you have credited it to the Minneapolis Institute of Arts. On a recent visit to the Kimbell Art Museum in Fort Worth, I noticed that the painting was missing. In its place was a note saying that it was on loan. I think you should give credit to the owner of the painting, rather than to the museum to which it was lent. It was the only one of the paintings reproduced that did not carry identification of the owner.
Martin Shockley
Denton, Texas
Mr. Shockley is correct. It was our oversight. Kimbell's photographer was Bob Wharton of Fort Worth. Ed.

Dear Sir: To your discussion of Alfred Gilbert's popular statue, *Eros,* you might add this footnote, which I found in H. V. Morton's *In search of London*: "Poor Gilbert, who was extremely temperamental and was always destroying his own work, was so exasperated by officialdom that when Eros was ready he told the Board of Works to melt it down, sell it and give the money to the poor; then he shook the dust of England from his feet and lived abroad for twenty years, returning only at the personal request of King George V."
Leonora Hering
Saratoga, California

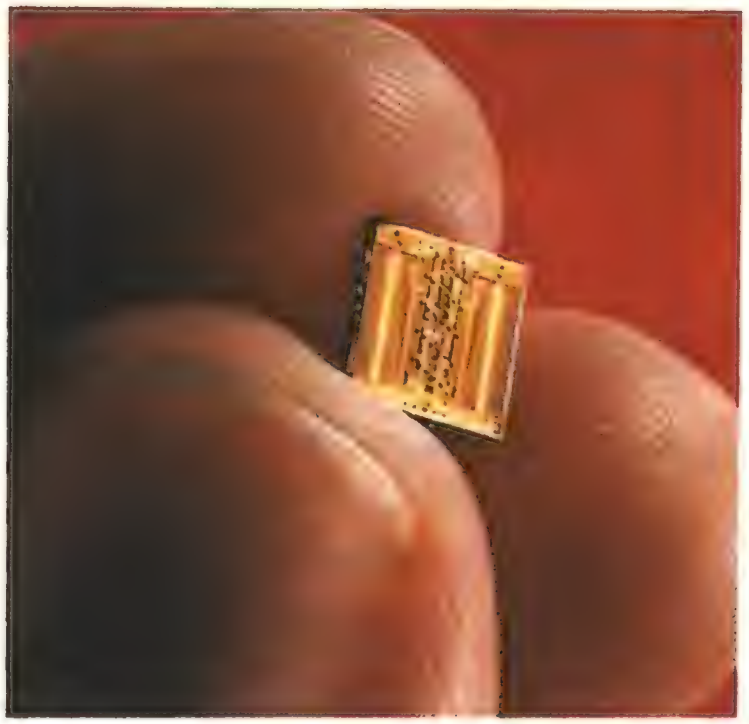
Dear Sir: Your cover and article by Maureen Green are most elegant, highlighting hitherto lesser-known painters. I was so taken by the cover painting, *May Sartoris,* that I would like very much to obtain a print. If it has been reproduced, I would like to know where to obtain it.
Stephen S. Hopkinson
East Braintree, Massachusetts
For Mr. Hopkinson and the many other readers who have inquired, posters are available at the following addresses: Department of Mail Sales, Minneapolis Institute of Arts, 2400 Third Avenue South, Minneapolis 55404, or from the Bookstore, Kimbell Art Museum, Box 9440, Fort Worth 76107. Posters are 20 by 30 inches, cost $6. Ed.

Peregrine falcons

Dear Sir: Having thoroughly enjoyed both the article on peregrines and the one

IBM Reports

Another first from IBM. Another way to do more for less.



This tiny electronic chip is a technological breakthrough in IBM computers.

A product of our laboratories, it can hold more than 64,000 pieces of information. That's 32 times more than previous IBM chips. And almost as much information as you could put in the entire memory of our early room-sized computers.

A handful of these chips could store all the works of Shakespeare.

In October, IBM became the first company to announce new computer systems to use such advanced, high-density chips. We're proud of that. Because being innovative means finding ways to put the products of our laboratories into products for people.

What's really significant about these amazing chips is that they can do a lot more for a lot lower cost.

For example, main memory prices for our new systems are about 1/6th the price of memories in our most powerful computers when they were introduced just two years ago.

In inflationary times like these, it's important to find ways to do more for less. We're working hard at it. So are our competitors.

That's why it's a constant challenge to make our products the best.

IBM

Helping put information to work for people

L.L.Bean tm

Outdoor Sporting Specialties

FREE

Spring Catalog

Fully illustrated. Features quality apparel and footwear for men and women; fishing, hiking, camping and canoeing gear, leather and canvas bags, furnishings for home or camp. All items guaranteed to be 100% satisfactory.

For 67 years L. L. Bean has provided high grade merchandise at reasonable prices. We personally test our products to insure that they represent a true value, are practical, functional and high in quality. L. L. Bean clothing is rugged enough to withstand outdoor use yet attractively styled and comfortable for casual wear. Our footwear is carefully designed to be well-fitting and long wearing. Many items are of our own manufacture.

SEND FREE CATALOG

Name _____

Address _____

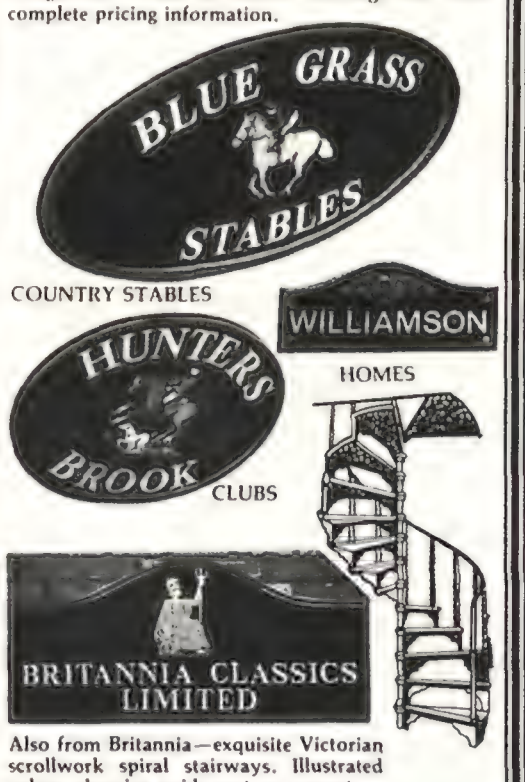
City _____

State _____ Zip _____

L. L. Bean, Inc.
1001 Casco St., Freeport, ME 04033

AUTHENTIC OLD ENGLISH NAME PLAQUES

Now you can identify your home or property with a custom cast solid metal plaque. These are the same elegant hand crafted plates that adorn the family homes of England. Select from 9 different shapes and sizes—a variety of emblems. Richly detailed, finished in gold and lustrous enamels. Distinctive, permanent recognition. Send for colour ordering form with complete pricing information.



Also from Britannia—exquisite Victorian scrollwork spiral stairways. Illustrated colour planning guide sent on request.

Britannia Classics Limited
Box 618 Dept. 00 Civic Industrial Park
LaSalle, Illinois 61301

Block-Front*
Circa 1760-1780
Chippendale

Queen Anne
Lowboy*
Original
Circa 1750,
New England

Ready to Assemble and Finish 18th Century Furniture

Some of the 24 Bartley classics, in hand crafted solid mahogany, oak or cherry. Totally authentic in design and beautifully constructed. Each kit is easily assembled and finished in your own home without tools. All pieces also offered completely assembled and hand finished.

Butler's
Tray Table

*Henry Ford Museum Reproductions

Please send me your illustrated catalogue of 18th century antique furniture reproductions available in kit form or hand finished. I am enclosing $1.00 to cover postage and handling.

Name _____

Address _____

City/State/Zip _____

The Bartley Collection, Ltd.

747 Oakwood Avenue, Dept. S-13 Lake Forest, Illinois 60045

on The Nature Conservancy, it seems timely to mention "the dean of American falconers," Morlan Nelson of Boise, Idaho, whose constant efforts and devotion for more than 40 years on behalf of birds of prey (most particularly peregrines and golden eagles) have not only been recognized around the world, but, most importantly, have resulted in permanent federally protected nesting areas in Idaho.

If he hadn't been in Saudi Arabia on behalf of The Nature Conservancy, he undoubtedly would have written his own compliments on these fine articles, making one exception, which is that eyass falcons do not have yellow feet until after their first year.

Betty Ann McCarthy
Belvedere, California

Birds-of-prey specialists here at Smithsonian, at Cornell and at the Interior Department report that the color of eyasses' feet varies; males tend to have yellow feet more often than females. Ed.

Dear Sir: Alex Shoumatoff, in his article on peregrines, stated that "the whole experiment on Shawangunk Ridge had to be halted." While the hack site he describes failed to successfully release any birds to the wild, another site less than five miles away on the same cliff was successful. Through the single-handed efforts of Bonnie Burkhart, two birds were successfully hacked.

Both of these Shawangunk Ridge hack sites were financed by the New York State Department of Environmental Conservation through a contract with the Peregrine Fund utilizing Endangered Species Act grant-in-aid funds.

Eugene R. McCaffrey
Supervising Wildlife Biologist
N.Y. State Department of Environmental Conservation
Delmar, New York

First flights

Dear Sir: I enjoyed Tom Crouch's splendid article on the 75th anniversary of the Wrights' first flight immensely and congratulate him on his ability to write with a clarity and simplicity that make complex shifts in technology understandable. Portraying a propeller as a "rotary wing" instead of an "air screw" is precisely the right description. Similar incisive descriptions of wing warping, and Manly's

EASTERN HAS A WARM SPOT JUST FOR YOU.

Come to a place where snow shovels don't exist. Where slush is just a word. And ice is something that refreshes a drink.

Come to Eastern's Florida. We can take you to more of it, with more sunny, budget-minded vacations, and more flights with discount fares than anyone.

1. SOUTH FLORIDA FUN CHOICE. $117-$326* PLUS AIRFARE. Sample the fun for 8 days/7 nights at selected hotels throughout South Florida. Relax in places like Miami, Ft. Lauderdale, Key Biscayne, West Palm Beach, or the Florida Keys. Includes airport transfers (except to Florida Keys). Prices will vary by destination. (Ask for IT8EA1SFUNW.)

2. SUNSHINE SPORTS. $298-$382* PLUS AIRFARE. Keep your form in form with tennis or golf for 8 days/7 nights at selected hotels in South Florida. Choose from places like Ft. Lauderdale, West Palm Beach, and Miami. And explore it all with a subcompact car† that's included for seven 24-hour periods. (IT8EA1SFUNW)

3. WALT DISNEY WORLD VACATION KINGDOM. $93-$246* PLUS AIRFARE. Here's our bargain way to the Magic Kingdom. Stay 8 days/7 nights at a selected Orlando hotel. You'll get Eastern's exclusive Walt Disney World Ticket Book, good for one day's admission and 9 attractions. Round-trip airport transfers included. (IT8EA10FUNW)

THE AMERICAN EXPRESS® CARD. Don't leave home without it.℠ It lets you charge any of these vacations and get extended payments with the "Sign & Travel"® plan. Pick up an application wherever the card is welcomed.

For more information call your travel agent. Or Eastern Airlines.

*Prices are per person, double occupancy, and do not include airfare, meals or local taxes. Prices are subject to change, vary depending on destination selected and expire 4/15/79. †Gas, insurance and applicable drop-off charges are not included in car rental.

EASTERN

WE HAVE TO EARN OUR WINGS EVERY DAY

South Pacific

Sail from California to Australia this Fall. See New Zealand, exotic isles.

For a magnificent adventure, sail away on our big, beautiful Pacific Princess. Proudly British-registered. The ultimate in luxury.

Depart Los Angeles Sept. 23—54 days. (Or San Francisco Sept. 22—55 days.) Cruise to Sydney, return to Los Angeles.

Drop anchor at Tahiti. Visit coral-ringed Raiatea. Tropical Pago Pago. Unspoiled Tonga. Moorea—the Paris of the Pacific. See fabulous Fiji, Apia, Hawaii. Explore Auckland, Sydney.

Less time? Cruise one way, fly the other. 27 days. Your coach air ticket between Sydney and most West Coast cities is included. And stopovers are easily arranged.

On the northbound cruise (Oct. 21) Jean-Michel Cousteau will host a special program.

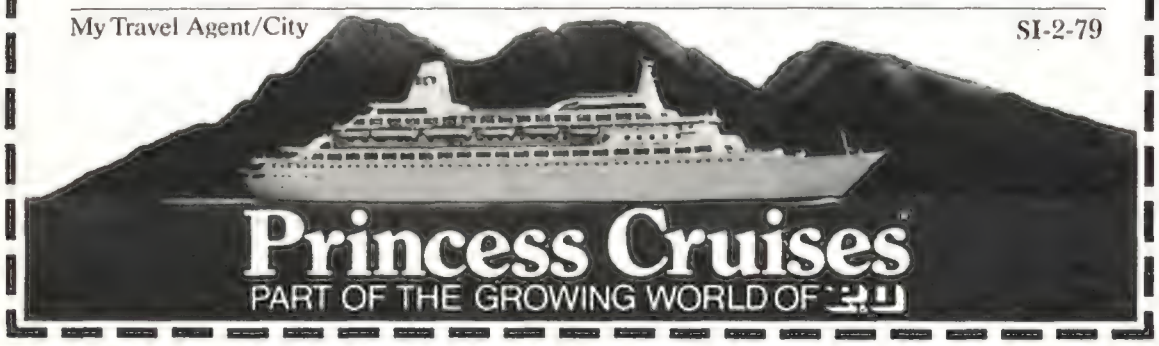
Call a travel agent now.

Princess Cruises, 2020 Avenue of the Stars, Los Angeles, CA 90067.
Please send brochures on ☐ South Pacific ☐ Acapulco 7-Day Sailaway ☐ Caribbean/Panama Canal ☐ Caribbean 7-Day Sailaway ☐ Alaska/Canada

Name

Address/City/State/Zip

My Travel Agent/City SI-2-79



Outside and inside, Lindals are rich with the warm natural beauty of Western red cedar.

Inside: expansive, free-flowing interiors, elegant cathedral ceilings, and windows that bring the outdoors in.

But more than that, Lindal invites you to add your own personality. Change the flow of the rooms. Take out walls. Emphasize a space you'll live in most.

If you have a dream home, don't ever give up the dream. Live it in a Lindal.

LINDAL CEDAR HOMES

☐ Enclosed is $2 for Planbook and Design Guide P.O. Box 24426 / Seattle, WA / 98124 / (206) 725-0900

Name

Street

City State Zip

Phone Location of building lot

SH926

inglorious flight "feet first" into the Potomac make me feel very thankful for this article.

Pat Harahan
Historian, Strategic Air Command
Offutt AFB, Omaha, Nebraska

Uranus

Dear Sir: Dennis L. Mammana, in his intriguing article on Uranus, seems to have exaggerated the peculiarity of the Uranian day. He states that on Uranus the day and night periods would be continuous for 42 years (one-half of its orbital period about the sun) because the planet "lies on its side." It is true that daylight would be continuous in one hemisphere while that polar region was directed toward the sun. (That is also true of our own polar regions.) However, the axis is directed toward the sun only a fraction of the Uranian year.

As the planet continues through its orbit, the axis moves away from the direction of the sun to the extreme of paralleling its orbital path. At such extremes, known as the equinoxes, day and night are of equal duration, and each occurs during one rotation. Hence, through much of the year, as the axis swings through the extremes and back again, the daylight periods resemble those in our own temperate regions.

Hyland B. Morrow
New Orleans

It is true that only at the poles of Uranus would an observer experience days and nights of 42 Earth-years. For an observer at mid-latitudes, the sun would not rise for about 20 Earth-years during "winter" and would not set for about 20 Earth-years during "summer." The rest of the Uranian year would provide days and nights similar to ours on Earth. Ed.

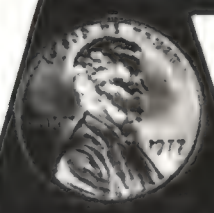
Hanta Yo

Dear Sir: Peggy Thomson's article about Ruth Hill's book, *Hanta Yo*, gives the impression that an Indian never uses the passive form. While Sioux Indian verb systems have no passive forms, these people certainly can express passive concepts. We should remind ourselves that English has no passive in the sense that other, particularly earlier, languages in the Indo-European family have passive voice inflections, as in Latin and Old Norse. Proto-Germanic, in developing its

TWIN SETS* Double the music Count as one!

* BARRY MANILOW LIVE 04607	Heifetz: Tchaikovsky Mendelssohn Violin Concertos 22851	BARRY MANILOW 23992 This One's For You	RONNIE MILSAP 33549 ONLY ONE LOVE IN MY LIFE	HELEN REDDY'S GREATEST HITS 32302
*ELVIS' WORLDWIDE Gold Award HITS Parts 1 & 2 13690	JIM ED BROWN HELEN CORNELIUS I'LL NEVER BE FREE 24581	GREASE Original Cast Recording 33606	STEVE MILLER BAND 23759 FLY LIKE AN EAGLE	JEFFERSON STARSHIP 30040 EARTH
*FRAMPTON COMES ALIVE! 23558	THE SPY WHO LOVED ME ORIGINAL SOUNDTRACK RECORDING 24149	FERRANTE & TEICHER ROCKY AND OTHER KNOCKOUTS 34182	PABLO CRUISE 34181 WORLDS AWAY	DOLLY PARTON HEARTBREAKER 23931
*STAR WARS ORIGINAL SOUNDTRACK 24216	CHUCK MANGIONE 33679 FEELS SO GOOD	DONNY & MARIE OSMOND I'M LEAVING IT ALL UP TO YOU 13422	THE STATLER BROTHERS 21672 ENTERTAINERS . . . ON AND OFF THE RECORD	Original Cast FIDDLER ON THE ROOF 00051
* BEACH BOYS ENDLESS SUMMER 23559	KC & THE SUNSHINE BAND PART 3 32232	A TASTE OF HONEY 14551	RUSH A FAREWELL TO KINGS 31992	GERRY RAFFERTY 23877 CITY TO CITY
	ARTUR RUBINSTEIN 13362 WORLD'S FAVORITE CHOPIN	BEVERLY SILLS ANDRÉ KOSTELANETZ MUSIC OF VICTOR HERBERT 31660	RUBINSTEIN Rachmaninoff Piano Con. No. 2 14313 Ormandy/Phil. Orch.	MICHEL LEGRAND 24534 TIMES OF YOUR LIFE

Wow!



The RCA Music Service is having a 1¢ SALE

Take any 6 tapes or records for only 1¢—plus postage and handling—when you agree to buy just 4 more hits at regular Music Service prices . . . and take up to three full years to do it.

Enjoy Top Hits at Top Savings!

Start Saving Now! Take any six 8-Track Tapes or Records or Cassettes for just 1¢ with trial membership. (Sorry, no mixing.) Indicate your choices on the coupon, enclose one penny, mail it today!

Colorful Magazine! Free Choice! Every four weeks illustrated MEDLEY brings news of almost 400 selections and features a "Selection of the Month" in your favorite music category. And, five times a year, you receive sale issues featuring a "Bonus Selection" and alternates at great savings. In all, you will have 18 purchase opportunities in the course of a year. No need to buy a selection every time. You merely agree to buy 4 more hits in the next three years at regular Music Service prices — usually $7.98 each for records or tapes. Choose from top labels like RCA, Capitol, Warner Bros., A&M, Atlantic, Arista, Mercury, ABC, TK, Casablanca, MGM, Elektra, London, United Artists . . . over 80 more!

Automatic Shipments! To get the regular "Selection of the Month" or the special sale "Bonus Selection," do nothing; it will be sent automatically. If you want other selections, or none, advise us on the card always provided and return it by the date specified. You always have at least 10 days to decide. But, if you ever have less than 10 days to make your decision, you may return your automatic selection at our expense for full credit.

Cancel whenever you wish after completing your membership agreement by notifying us in writing. If you remain a member, choose 1 selection FREE for every 2 you buy at regular Music Service prices! (Postage & handling charge added to each shipment.)

Free 10-Day Trial! If not satisfied return your 6 hits after 10 days for a prompt refund. Mail coupon today!

RCA

RCA Music Service, 6550 E. 30th St., Indianapolis, Ind. 46219

More Hits To Choose!

• Barry Manilow II	23765	• John Denver: Rocky Mt.	13686
• Rita Coolidge: Love Me	24331	• Steely Dan: Aja	23475
• Village People: Macho	41876	• Statler Bros.: Stories	31859
• M. Haggard: 11 Winners	14686	• Ventures: Gold	23502
• Steve Miller: Dreams	14443	• Kenny Rogers: Daytime	34357
• Neil Sedaka: Gr. Hits	24171	• Kiss: Rock & Roll Over	33990
• Best Of Beach Boys	23946	• J. Strauss' Gr. Hits	10143
• Ormandy: Nutcracker	14350	• Alpert/TJB: Gr. Hits V. 1	00295
• Best Of BTO	43597	• Rita Coolidge: Anytime	24126
• Carpenters: Singles	04393	• Hair/Original Cast	03292
• Bob Seger: Night Moves	43584	• Johnny Rivers: Gold	33498
• South Pacific/Soundtrack	00049	• Bing Crosby: Legendary	33600
• Nazareth: Hair Of Dog	33747	• Glen Campbell: Gr. Hits	24107
• Tom Jones: Gr. Hits	23674	• Chester & Lester: Monsters	33734
• D. & M. Osmond: Winning	30393	• D. Parton: Here You Come	34134
• Helen Reddy: Sunshine	20079	• Cliburn: Fav. Encores	04187
• Cat Stevens: Gr. Hits	20015	• Kendalls: Old Fashioned	33201
• Segovia: Spanish Faves	04486	• Solti: Beeth. Sym. #5	33492
• Waylon & Willie	34234	• Toby Beau	43862
• Solid Gold Rock V. 1	13711	• Evelyn King: Smooth	24132
• Paul Anka: Gold Hits	00120	• Best Of Henry Mancini	00222
• Rocky/Soundtrack	22868	• Very Best Connie Francis	23434
• Jeff. Starship: Spitfire	14279	• L.T.D.: Togetherness	14430
		• Hello Dolly/Orig. Cast	00052
		• Linda Ronstadt: Wheel	13933
		• Zubin Mehta: Star Wars	34361
		• Chuck Berry: Gold	13728
		• Best Of Freddy Fender	14013
		• Best Of Jim Reeves	00267
		• Ohio Players: Gold	30281
		• Cliburn: World's Fav.	13500
		• Mills Bros.: Gr. Hits	04482
		• Bay City R.: Gr. Hits	24396
		• Shenandoah/Orig. Cast	23591
		• Bonnie Tyler: Heartache	24130
		• KC & Sunshine Band	32000
		• Hank Williams: Gr. Hits	23656
		• Disco Party	34207
		• Kiss: Destroyer	24001
		• Dawn's Gr. Hits	24018
		• Horowitz Concerts	33457
		• Best Gordon Lightfoot	43847
		• Conway Twitty's Gr. Hits	23419
		• Horowitz: Favorites	22516
		• Hall & Oates: Red Ledge	13472
		• Stokowski: Scheherazade	34356
		• Capt. & Tenn.: Gr. Hits	30116
		• D. & M. Osmond: TV Show	44046
		• Stokowski: Wagner	03928
		• Outlaws (Waylon/Willie)	33275
		• Q. Jones: Sounds . . . And	34166

ACT NOW! MAIL COUPON TODAY!

Mail to: RCA MUSIC SERVICE
P.O. Box RCA 1, Indianapolis, Ind. 46291

1 TAPE PENNY HERE

I enclose 1¢. Please accept my trial membership in the RCA Music Service and send me the 6 hits I've indicated here under the terms outlined in this advertisement. I agree to buy as few as 4 more hits at regular Music Service prices in the next three years, after which I may cancel my membership. (Postage & handling charge added to each shipment.)

2 **SEND MY SELECTIONS ON** (check one only):
☐ 8-TRACK TAPES ☐ RECORDS ☐ CASSETTES

3 **I am most interested in the following type of music —but I am always free to choose from every category** (check one only):
1-☐ EASY LISTENING (Instrumental/Vocal)
2-☐ COUNTRY 3-☐ TODAY'S SOUND (Rock/Soul/Folk)
4-☐ BROADWAY-HOLLYWOOD-TV 5-☐ CLASSICAL

4 **RUSH ME THESE 6 SELECTIONS** (indicate by number):

5 ☐ MR. ☐ MRS. ☐ MISS _____ (Please Print)

Address _____

City _____ State _____

Phone (_____) _____ Zip _____
Area Code

Limited to new members; continental U.S.A. only; one membership per family. Local taxes, if any, will be added.

T-DF WW

RCA Music Service reserves the right to request additional information or reject any application.

RCA 614 TRADEMARKS USED IN THIS ADVT. ARE PROPERTY OF VARIOUS TRADEMARK OWNERS, TMKIS1 ® RCA CORPORATION. SELECTIONS MARKED Ⓔ ARE STEREO EFFECT REPROCESSED FROM MONOPHONIC.

An Alternative To The $21 Button Down Ours...$14.

100% COMBED COTTON OXFORD BUTTON DOWN

Finest traditional design and tailoring. Seven button front, placket sleeve, left breast pocket, double reinforced side seams and sleeves.
Your satisfaction guaranteed.
Blue or White. Sizes 14½-17½/32-35.

Huntington Clothiers
2206 BRYDEN RD. • COLUMBUS, OHIO 43209

Please send me 100% cotton shirt(s) @ $14.00 ea.
Add $1.75 for ship. & Ins. regardless of quantity.
Ohio Res. add 4% sales tax.

Size ____/____ ____ Qty White ____ Qty Blue

☐ Pers. Ck. ☐ Mstr. Chg. ☐ Visa ☐ Am. Exp.

Card No. _____

Exp. Date _____ Mstr. Chg. Bank No. _____

Signature _____

Name _____

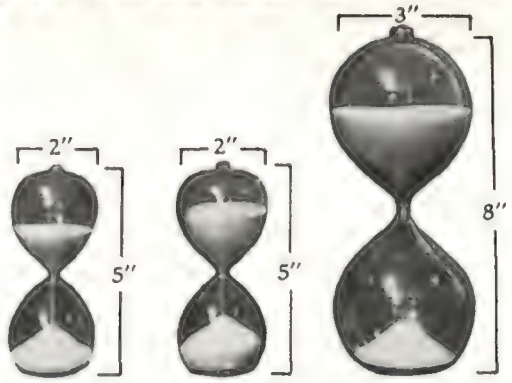
Address _____

City _____

State _____ Zip _____

SSB

HOURGLASSES



04N11-GZ 04N21-GZ 04N31-GZ

These precision timers are hand-blown in Europe to Woodcraft's specifications, and filled with very fine sand to insure accuracy. For woodturners and carvers, in three sizes. Wood not included.

04N11-GZ	3 minutes	$3.30
04N21-GZ	10 minutes	$4.80
04N31-GZ	1 hour	$6.20

Mass. Res. add 5% Sales Tax
All Prices Postpaid
Catalog $1.00. Free with order.
Order by mail or call Toll Free
1-800-225-1153 (Ma. Res. 1-800-842-1234)
Master-Charge, Visa, Am. Express welcome.

WOODCRAFT
SUPPLY CORP.
Dept. S29 313 Montvale Ave.
WOBURN, MASS. 01801

KAHLÚA® & Coffee
oooh.
IMPORTED
Delicious idea: Kahlúa in coffee. If you like, add a twist of lemon or lime. And send for the Kahlúa recipe book. Our treat.
Kahlúa. Coffee Liqueur from Sunny Mexico. 53 Proof. Maidstone Wine & Spirits Inc. 116 N. Robertson Blvd. Los Angeles, CA 90048.

Old Saxon and Anglo-Saxon (Old English) branch, lost a true passive, while we today express passive ideas from a makeshift of compound forms.

Truly, it makes no more sense to write a book in English about Sioux Indians not using English passive constructions on the grounds that this would impede our comprehension of Indians than it would have made sense for Bede, the early medieval writer, not to have employed Latin passive verb forms in his descriptions of his contemporary Anglo-Saxons because these English Saxons had no true passive forms in their language.
William H. Strange, M.D.
Lubbock, Texas

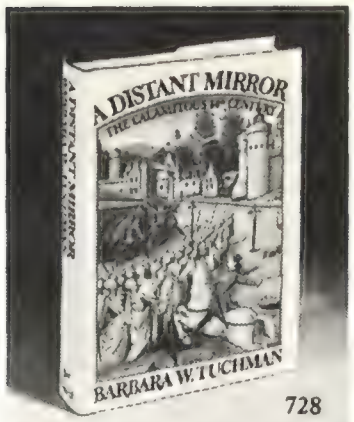
Dear Sir: I suppose that I am one of the activist "Indians with makeup from the Avon Lady" who make author Hill "livid." I am a Hopi Indian writer, artist and graduate student in anthropology. One of the main thrusts of my research is to show that although Indian life has changed a great deal (as have the lives of non-Indians), Indian people have *not* become "less Indian" or less "traditional." It is the apparent belief of a large number of non-Indians that we are somehow "less Indian" now, and that therefore they must be Indian for us. The fact is that Indian people are still Indian, have placed a high priority on maintaining their diverse native ethnicities, and—as a general rule—resent non-Indian people who think they can study for a few years to "become" Indian.
Wendy Rose
Berkeley, California

View from the castle

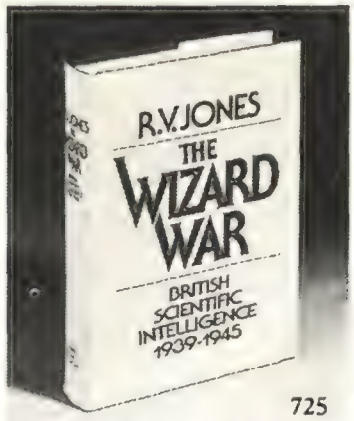
Dear Sir: As a former Peace Corps volunteer who conducted environmental research in the Philippines and coordinated site visits for Smithsonian/Peace Corps staff, I was disappointed to read in the "view from the castle" that the Smithsonian/Peace Corps program is being discontinued.

If the Peace Corps' goal is to meet basic human needs on anything but the most immediate time scale, then village-level environmental programs such as natural resource management and conservation education should be given the very highest priority.
R. Paul Chakroff
Rockville, Maryland

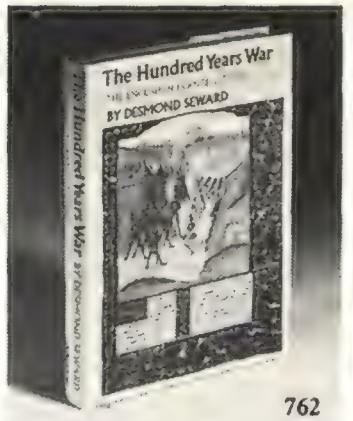
23 engrossing books of history and world affairs...



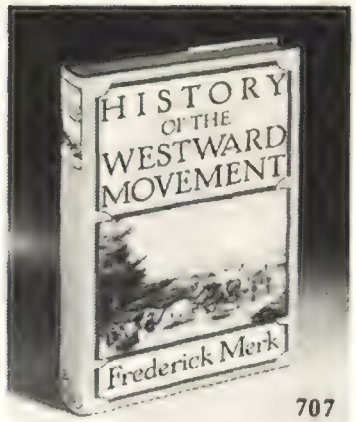
A Distant Mirror: The Calamitous 14th Century. *By Barbara Tuchman.* A vivid reflection of life in the 14th century. $15.95/**$9.95**



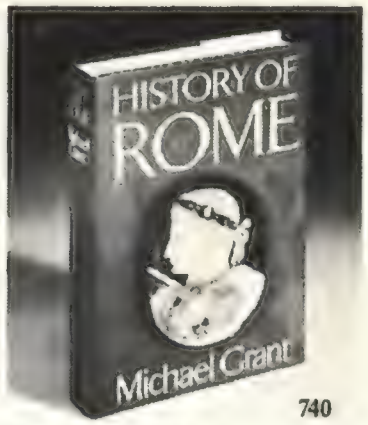
The Wizard War: British Scientific Intelligence, 1939-1945. *By R. V. Jones.* The battle waged by British scientists and their German counterparts. $12.95/**$8.95**



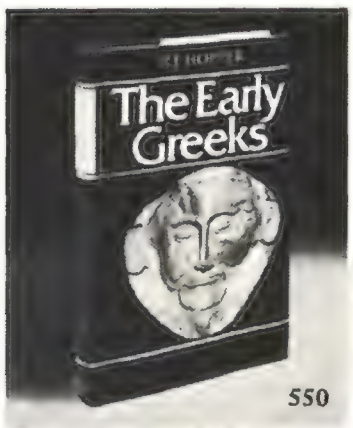
The Hundred Years War: The English in France, 1337-1453. *By Desmond Seward.* $11.95/**$8.95**



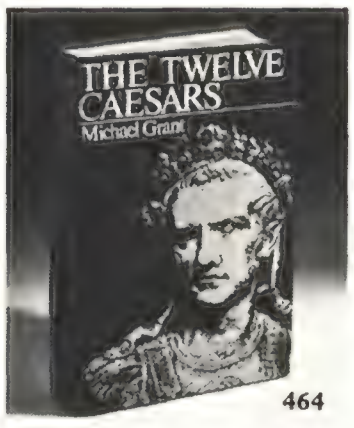
History of the Westward Movement. *By Frederick Merk.* The great migration from Europe to California. $20.00/**$11.95**



History of Rome. *By Michael Grant.* A narrative history with description of Roman life in each significant period. $17.50/**$11.50**



The Early Greeks. *By R. J. Hopper.* The emergence of Greek civilization in all its archaelogical and cultural splendor. $25.00/**$13.00**



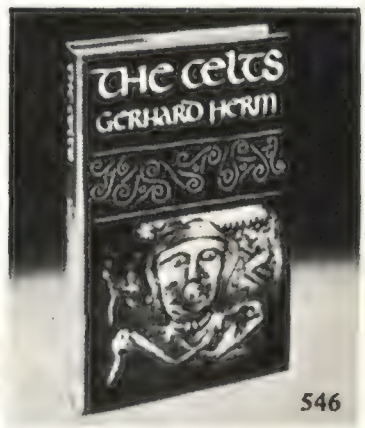
The Twelve Caesars. *By Michael Grant.* From Julius in 49 B.C. through Domitian in 96 A.D. $12.50 **$8.75**

Take Any 3 All for 99¢

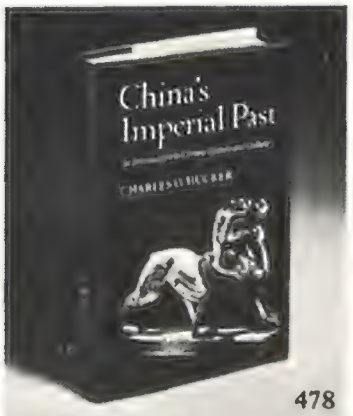
values up to $65.00

with trial membership

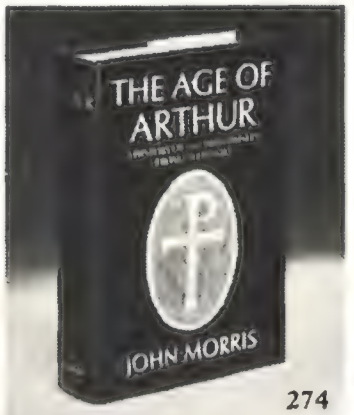
(First price is publisher's list. **Boldface** shows member's price.)



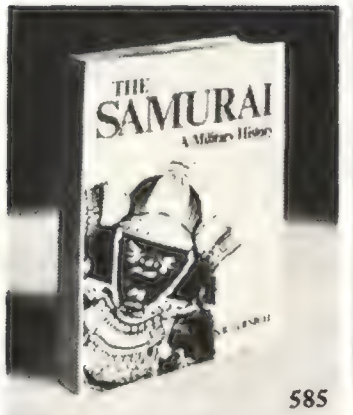
The Celts. *By Gerhard Herm.* A 2000-year epic study of a fierce people and their rise to an empire rivaling Greece and Rome. $12.50/**$8.50**



China's Imperial Past: An Introduction to Chinese History and Culture. *By Charles O. Hucker.* China's achievements from prehistory to 1850. $17.50/**$11.95**

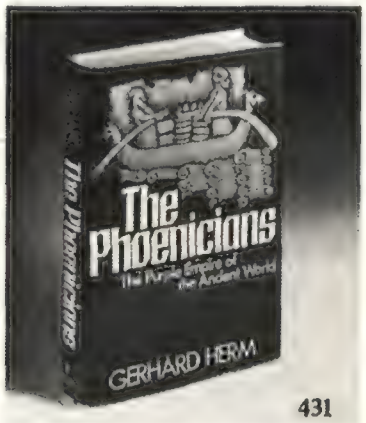


The Age of Arthur. *By John Morris.* British history from 350-650 A.D. $17.50/**$11.95**



The Samurai: A Military History. *By S. R. Turnbull.* An exhilarating account of Japan's fierce warriors and their code of honor. $17.95/**$11.95**

A History of the Vikings. *By Gwyn Jones.* From prehistory to 1066 A.D. $15.00/**$9.95**



The Phoenicians. *By Gerhard Herm.* A portrait of the people who traveled and traded with the world for 1000 years. $8.95/**$7.50**

P79B

4 Good Reasons To Try The History Book Club

Big cash savings. Last year our members saved 33% on their Club purchases. Your total savings as a trial member, including this introductory offer, can be more than 50%.

Liberal bonus plan. You can qualify for added savings through bonus books, selected from our full list of 150-200 fine works.

Exceptional quality. In its 32 years, the Club has distributed over 1,000 books, including 67 award winners. Our books are the equal of publishers' editions, not economy reprints.

Membership Benefits. A membership account will be opened for you, to which your purchases will be charged at the low member's prices. You need pay only after you have received your books. A postage-and-packing fee is added to each shipment. Every four weeks (13 times a year) you will receive our *Review* containing descriptions of new and recent selections. If you want the Editors' Choice, do nothing; it will be sent automatically. If you want another book, or no book at all, return the card by the date specified. If you should receive an unwanted book because you had less than ten days to decide, you may return it and pay nothing. We guarantee postage.

More fine books to choose from:

(First price is publisher's list. Boldface is member's price.)

163. **Medieval History: The Life and Death of a Civilization.** *By Norman F. Cantor.* $11.95/**$8.95**

414. **Russia Under the Old Regime.** *By Richard Pipes.* 1000 years of Russian growth. $17.50/**$10.95**

517. **The Universe: Its Beginning and End.** *By Lloyd Motz.* A look at the origin, evolution and predicted collapse of the universe. $14.95/**$9.95**

667. **The Devil: Perceptions of Evil from Antiquity to Primitive Christianity.** *By J. B. Russell.* $15.00/**$9.95**

520. **Plagues and Peoples.** *By William H. McNeill.* Impact of diseases on civilization from prehistory to the present. $10.00/**$7.75**

674. **Hitler's Spies: German Military Intelligence in World War II.** *By David Kahn.* $16.95/**$10.95**

665. **The Hittites: And Their Contemporaries in Asia Minor.** *By J. G. Macqueen.* $18.00/**$11.00**

606. **The Mycenaean World.** *By John Chadwick.* A vivid reconstruction of pre-classical Greece. $17.95/**$11.95**

708. **Man's Rise to Civilization: The Cultural Ascent of the Indians of North America.** *By Peter Farb.* $15.00/**$9.95**

739. **Montaillou: The Promised Land of Error.** *By Emmanuel LeRoy Laudrie.* A study of the life in the village of Montaillou during the 14th century. $20.00/**$13.00**

The History Book Club

Stamford, Conn. 06904

Please enroll me as a trial member and send me the four books whose numbers I have entered below. Bill those on the left at 99¢ for all three and the fourth at the low member's price, plus postage-and-packing.

☐ ☐ ☐ ☐

I may return the books within three weeks at your expense and owe nothing. Or, I will buy four more selections within a year *(not counting my choices above)*, and then I may resign at any time. All Club purchases are at low member's prices, and a postage-and-packing fee is added to all shipments.

Print name_____

Address_____

City_____

State_____ Zip_____

In Canada; mail to The History Book Club, 16 Overlea Blvd., Toronto M4H 1A6 Ontario. ST-39S

IN A BMW, THE DRIVER IS NOT ASKED TO COMPENSATE FOR THE SHORTCOMINGS OF THE AUTOMOBILE.

Like all honeymoons, the first few months of new car ownership are generally a period of adjustment.

A time when man accommodates himself to the idiosyncracies of his machine—those little quirks of engineering that can make the act of driving something to be endured rather than something to be enjoyed.

Perhaps because of our long involvement in motor racing—where such an antagonistic relationship would be intolerable—we at the Bavarian Motor Works in Munich, Germany, take a wholly different approach to building automobiles.

An approach that begins with the concept that, above all, a car must function as one with its driver.

YOU DRIVE A BMW.
IT DOES NOT DRIVE YOU.

When you drive the BMW 320i for the first time, you will experience a curious sensation of being part of the car itself—an exhila-

© 1978 BMW of North America, Inc.

The extraordinary road-holding ability of the BMW 320i is graphically illustrated, above, travelling at a high speed through turn #6 at the Sears Point International race course. Note: as the BMW goes into the turn, the unique angling of the MacPherson front struts reduces the lean of the inside front wheel, while the outside front wheel remains vertical; inside and outside rear wheels remain vertical due to semi-trailing arm design in the rear.

rating feeling of control.

When you press the accelerator, the two-liter, K-Jetronic, fuel injected engine responds without lag.

Its four-speed manual transmission (automatic is available) slips smoothly and precisely into each gear.

The suspension—independent on all four wheels, with MacPherson struts and eccentrically-mounted coil springs in front, semi-trailing arms and coil springs in the rear—allows each wheel to adapt itself quickly and cleanly to every driving and road condition.

Extensive biomechanical research has been conducted into the critical relationship between seat location, visual position, steering wheel angle, pedals and controls.

Instruments are clearly visible and illuminated at night by an optically beneficial orange light; controls are readily accessible.

Pedal direction and pedal pressure have been carefully balanced to reduce fatigue and facilitate effortless gear changing.

All told, the only adjustment you will have to make as the new owner of a 320i is that you will have no adjustments to make at all.

If the thought of owning such a car intrigues you, call us anytime, toll-free, at 800-243-6000 (Conn. 1-800-882-6500) and we'll arrange a thorough test drive for you at your convenience.

THE ULTIMATE DRIVING MACHINE.

Bavarian Motor Works, Munich, Germany.

"I could have had the State Department job but they insisted I divest myself of my entire stock of Black Label"

Johnnie Walker
Black Label Scotch
12 YEARS OLD

12 YEAR OLD BLENDED SCOTCH WHISKY, 86.8 PROOF. BOTTLED IN SCOTLAND. IMPORTED BY SOMERSET IMPORTERS, LTD., N.Y.

Phenomena, comment and notes

Unlikely backdrop for science meeting in Gatlinburg, Tennessee

After phylogenetic hypotheses, future of the universe seems almost as easy to grasp as fishing

As the last leaves were falling in Tennessee's Great Smoky Mountains, I visited the town of Gatlinburg to attend a meeting of the Council for the Advancement of Science Writing. Once each year the Council brings scientists and science journalists together for a bout of collective consciousness-raising aimed at increasing the journalists' understanding of affairs on scientific frontiers.

One would expect such a conclave to be held in, say, the cerebral atmosphere of a great university campus. Gatlinburg, by contrast, is an entrepreneurial projectile aimed at the soft underbelly of the vacationing American. As one drives toward the town, billboards proclaim the delights ahead. See UFOs at the World of the Unexplained! See Elvis Presley at the Wax Museum! Play Hillbilly Golf! In the town itself, between the fast-food restaurants and museums devoted to the marvels of Ripley's Believe It or Not and the *Guinness Book of World Records*, lie dozens of souvenir shops displaying an astonishing variety of folderol. There one can purchase anything from a three-story pink birdbath with an angel on top to a genuine World War I bayonet, available for $14.95 from The Acorn, "the world's largest knife store."

In these far-from-scientific surroundings, then, scholars and journalists met for a four-and-a-half-day skull session. As a nonspecialist in this kind of reporting, my lingering impression of the meeting was that science is long and life is short, and that it can be very difficult, in these complex times, to understand just how scientists do what they do.

Some years ago I set out to write a story on a noted theoretical physicist. He graciously allowed me to dog his footsteps and sit in on all of his conferences with his colleagues, and tried with great patience to make me understand the questions in particle physics that consumed him. At the end of ten days I still hadn't the foggiest notion of what he was talking about, and he finally said in exasperation, "I simply cannot explain to you what it is that I do, for there are no words to describe it."

Exactly. As science moves farther toward the limits of the knowable, less and less of it can be adequately explained in ordinary language. Scientists communicate among themselves in mathematical formulas and symbols for abstract concepts, and in a vocabulary of special words that are shorthand for large ideas and thus often cannot be simply defined.

All of the scientists who briefed us in Gatlinburg were top men in their fields, articulate and of uncommon intelligence. Each had something interesting to say: for instance, that before long we will—if we want to—be able to transplant a human embryo from the womb of its mother to the womb of a foster mother. Or that new research on different types of hepatitis may increase our ability to cope with that disease. Or that we can chill certain living cells to —196 degrees C, at which temperature they should theoretically remain viable for up to 10,000 years.

But as the scientists moved on to the specific details of how they reached their conclusions or how they performed their experiments, they frequently left me struggling far behind. I heard about such things as formulations of phylogenetic hypotheses, punctuated equilibria, radiative corrective models, hemispheric asymmetry, tropopause discontinuities, alleles of HLA-A, steam-cycle thermodynamic efficiency and anomalous disturbances. To make these things more clear, the scientists showed us a lot of charts and graphs; I found that, like the paintings of Jackson Pollock, they may please the eye without necessarily informing the mind.

One day we all visited the Oak Ridge National Laboratory—its proximity was one reason for selecting Gatlinburg as a meeting site—and there we listened to a briefing by John F. Clarke of the Department of Energy on nuclear fusion, a process which in the future could conceivably transform sea water into abundant energy. Dr. Clarke clearly felt that fusion was a very good thing indeed. He acknowledged that the technical problems were enormous, but seemed optimistic about our ability to overcome them.

But when Dr. Clark moved on to specifics and began talking about such things as toroidal magnetic field energy density,

If you purchased this coin for $20 in 1948, it would be worth $12,000 today.

True, this Silver Dollar is in a class by itself, but many others have grown a hundred fold and more. Since 1971, a representative selection of U.S. rare coins increased by 30% a year. Outperforming savings, stocks, bonds; even real estate. The IRS has even O K'd rare coins for IRA and KEOGH pension plans. That's why more investors are turning to us for help. We've been giving our customers rare coins at fair prices for over 30 years. Invest $50 a month, or $50,000 in a day; we'll give you the advice you need.

For more detailed information about our various investment programs, write Rare Coins, Littleton, New Hampshire, 03561.

Name_____ PC-7

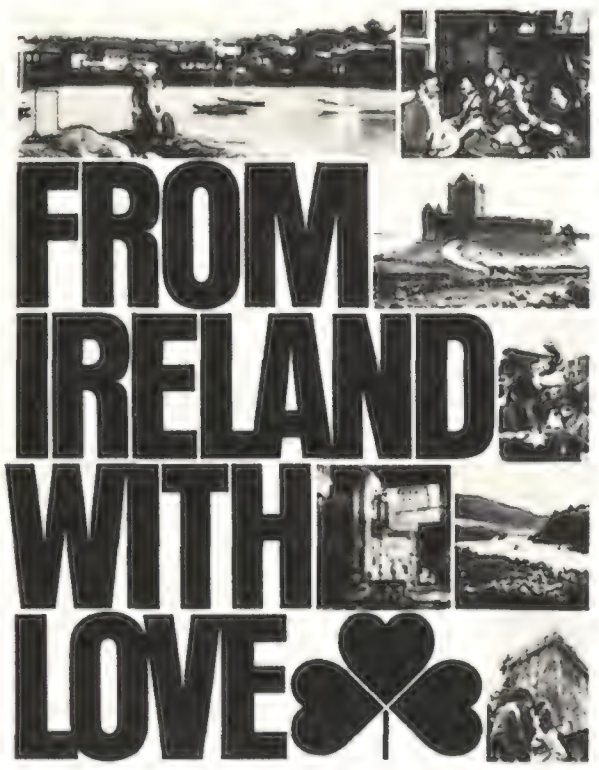
Address _____

City _____ State _____ Zip _____

Littleton
Rare Coin Investments

Ireland...friendly, unspoiled, inviting, exciting. From sightseeing to shopping, from castles to cottages, to the Abbey Theatre. And it's described to perfection in this beautiful 32-page full color book. Take the first step toward a perfect vacation by writing, then see your travel agent.

IRISH TOURIST BOARD
Box 1200
Long Island City, New York 11101



IRISH TOURIST BOARD, BOX 1200, LONG ISLAND CITY, N.Y. 11101
Please send me your free, 32-page color book, "From Ireland With Love."

NAME

ADDRESS

CITY STATE ZIP

MY TRAVEL AGENCY IS FK-91

YOU DON'T HAVE TO BE IRISH TO LOVE IRELAND

my comprehension grew somewhat muzzy. It got even muzzier in other briefings.

Dr. Allan Sandage, an astronomer from the Hale Observatories in Pasadena, addressed us on the subject of The Universe. For 50 years, Dr. Sandage explained, scientists have believed that the universe is expanding. The question cosmologists are now grappling with is: will the universe continue to expand forever, or will it, so to speak, run out of gas billions of years hence and then collapse in upon itself?

Dr. Sandage's language was not difficult to grasp, for he used everyday words. But one is humbled by the very magnitude of the ideas. It struck me that only years of intimacy with physics and astronomy could leave one feeling quite comfortable with such concepts.

For the benefit of those who specialize in baroque worry, I should add that Dr. Sandage brought good news—he believes the universe probably will *not* collapse.

There was some brain-numbing bad news in Gatlinburg, too, supplied by Dr. John Mercer of the Institute of Polar Studies at Ohio State University. Dr. Mercer, a glacial geologist, is concerned about the "greenhouse effect." This has to do with carbon dioxide in the Earth's atmosphere that allows sunlight to penetrate to the surface but blocks longer-wave infrared radiation from escaping to space, thus trapping the heat it carries in the lower atmosphere. Indeed, the alarm with which Dr. Mercer views the subject is indicated by a subtitle he suggested for his briefing: "Why a 20-year-old should not buy a retirement home in South Florida."

Dr. Mercer explained that adding carbon dioxide to the atmosphere means more heat will be trapped. The world will get warmer and Antarctic ice will melt, raising the level of the seas. If we continue burning fossil fuels at our present accelerating rate, said Dr. Mercer, the atmospheric carbon dioxide will double within only 50 years. Such a doubling would increase temperatures in the tropics and temperate zones only moderately; but in polar regions, where the greenhouse effect is magnified (for reasons clearer to Dr. Mercer than to me), the difference could be as much as 18 degrees F. The warming trend could melt the huge ice sheet that covers West Antarctica, thus raising sea level 15 to 25 feet and inundating a great deal of real

What your home could have in common with the Met, the Tate, and the Louvre.

Cuca Romley's *Winter Solstice*, original hand-colored etching. Signed limited edition of 150.

Victor Vasarely's *Byss*, original serigraph. Signed limited edition of 150.

Marcelle Stoianovich's *A Domani*, original lithograph. Signed limited edition of 195.

Jean-Pierre Cassigneul's *Deauville*, original lithograph. Signed limited edition of 100.

In your own home, you can exhibit original work by artists who are represented in the world's great museums and galleries.

Artists like Calder. Chagall. Dali. Miro. Picasso.

At the Original Print Collectors Group, we offer moderately priced limited edition prints by these and other well-known artists.

Our offerings include signed original etchings, engravings, lithographs, woodcuts, and silkscreen prints.

Each print we offer is signed and numbered by the artist. Custom-framed. Accompanied by a certificate of authenticity and a full money-back guarantee.

And each print has been chosen not only for its beauty but for its investment value.

(Works by the artists we offer tend to appreciate, sometimes as much as 30% in a single year. Perhaps that's why *The Wall Street Journal, Business Week, Money,* AP and UPI have quoted us as an authority on investing in art.)

For more information, send in the coupon. There's no obligation.

You'll find out about the special pleasure of owning original art, instead of just visiting it.

Earl Klein's *Sea Birds*, original serigraph. Signed limited edition of 175.

Gilles Figuier's *Rêverie Bleue*, original lithograph. Signed limited edition of 150.

Jerome Schurr's *Yosemite*, original serigraph. Signed limited edition of 175.

Joan Miro's *45 Rue Blomet*, original lithograph. Signed limited edition of 100.

Original print collectors group, Ltd.

120 East 56th Street, Dept. S-40, New York, N.Y. 10022

☐ PLEASE SEND ME YOUR FREE COLOR BROCHURE, LATEST NEWSLETTER AND OTHER INFORMATION.

Name _____

Address _____

City _____ State _____ Zip _____

PLEASE PRINT LEGIBLY

Frederique Defossez' *Ile St. Louis*, original lithograph. Signed limited edition of 175.

BEAUTIFUL BERENGARIA...
wife and constant companion to Richard "the Lion-Hearted." Daughter of the King of Navarre, Berengaria was a British Queen who never saw England. Despite his temperament, King Richard I was a romantic and deeply in love with Berengaria.
The Cybis sculpture of Berengaria is dressed in hunting garb of the same rose hue as that of Richard's tunic. The costume has an oriental flavor, indicative of the times. A merlin (female hawk) rests on her arm. This is a classic work of art by Cybis.
15 inches tall
An issue of 500
$1450
Brielle China & Galleries
Write for complimentary color brochures of Portraits in Porcelain, or other Cybis sculptures, and a free subscription to the Brielle Porcelain Report... a "State of the Art" newsletter for American Porcelains.

To place your order or to request further information:
CALL....TOLL FREE (800) 631-2156 in the continental U.S.
COLLECT (201) 528-8400 in New Jersey

Charge Accounts Invited. VISA, Master Charge, American Express accepted. 5% sales tax for New Jersey residents.
Brielle China and Galleries, 707-F Union Avenue, Brielle, New Jersey 08730

If the Antarctic ice melted, the blue portion of Florida would be underwater.

estate, including much of Florida (above).

Perhaps the only solace that one might take from Dr. Mercer's gloomy prognosis is that we are possibly approaching the end of the interglacial period in which Man's civilization developed. If we can stave off the next Ice Age by sacrificing Miami Beach and—with luck—Atlantic City, there are those who might consider the bargain a good one.

One day, mind areel, I played hooky—from, I believe, the subject of phagocytes. I went up to Great Smoky Mountains National Park, the entrance of which lies just outside Gatlinburg, and found a small, crystalline stream that ran beneath overarching rhododendrons. Galaxies away from wax effigies of Elvis, I assembled the little pack fly rod that I carry when traveling. After forming my phylogenetic hypothesis, I radiatively corrected my number 16 hair-wing coachman to a 5X leader and alleled it across the stream to punctuate the equilibria. The tiny fly floated delicately for a while, then suddenly disappeared in an anomalous disturbance. I was fast to a trout.

It struck me afterward—I'm sure I thought about nothing at the time except landing my fish—that in spite of a long-standing devotion to the pursuit of things with fins, I understood the mysterious being of the trout no better than I understood toroidal magnetic field energy density. If I was not always sure what the scientists were up to, I was pleased that *somebody* was out there chipping away at the edges of the incomprehensible, just as I was pleased, there beneath the rhododendrons, to unhook the trout and release it back into the clear water.

—Don Moser

Should you invest in a tax exempt bond fund?

YES ☐ NO ☐ Do you have taxable income of $25,000 or more?

YES ☐ NO ☐ Do you want income from relatively long-term tax exempt investments without losing the ability to withdraw any part of your money if the need arises?

YES ☐ NO ☐ Would you like to compound the income from your investment tax free?

YES ☐ NO ☐ Are you now receiving interest on dividends that are taxable?

YES ☐ NO ☐ Do you consider municipal bonds a tempting investment but too complicated or demanding for your personal supervision?

YES ☐ NO ☐ Would you like to receive a monthly income check exempt from Federal income taxes?

YES ☐ NO ☐ Would you like to invest in a municipal bond fund without paying any commission or sales charge?

If you answered "yes" to any of these questions, please let us send you a prospectus of the Dreyfus Tax Exempt Bond Fund, Inc. Just mail the coupon. Or save time! Call toll free day or night:

800-325-6400

(For questions call 9AM-5PM 212-223-0303; Out of New York City call collect. Out of New York State call toll-free 800-223-5525)

The Dreyfus Tax Exempt Bond Fund, Inc.

600 Lincoln Boulevard, Middlesex, NJ 08846

For more complete information, including management fee charges and expenses, obtain a prospectus by sending this coupon. Read it carefully before you invest or send money.

Name_____

Address_____

City_____ State_____ Zip_____

091T103 T425

Income may be subject to some state and local income taxes.

The civilized way to see Greece.

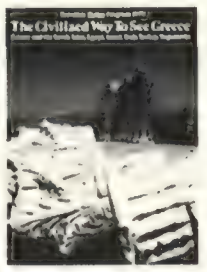
There are many brochures around that give you bits and pieces of Greece.

Traveline's book gives you the whole Greece. It's packed with sun and fun. Greek Isles' cruises. Tours of Classical Greece. Elegant escorted tours.

Many plans add Egypt or Israel. All include *scheduled* service on the No. 1 nonstop airline to Greece, Olympic Airways.

Mail this or see your travel agent.

But don't see Greece without seeing our book. You'd miss too much.



Get the complete, unabridged book on Greece.

TRAVELINE

For free book, mail to Traveline, Inc., 635 Madison Ave., NY, NY 10022

Other offices: Beverly Hills, Falls Church, VA; Hollywood, FL; Indianapolis, Toronto.

Name Address

City State Zip Travel Agent

SM

Marco. The tropical island with only one hotel.

Marco. It's a world apart.
But not a world away.
A tropical island. With one hotel, commanding three-and-a-half miles of white beach, and sea-polished shells, and the blue-green Gulf of Mexico.
A place to indulge yourself with golf, tennis, fishing, sailing, and all the idle pleasures of the world.
Or, to wander off barefoot and satisfy your spirit with a sense of splendid isolation.
For brochures or reservations, see your travel agent.
Or call toll-free: 800-237-7509.
In Florida: 813-394-2511.

Marco
BEACH HOTEL & VILLAS

Marco Beach Hotel and Villas, Dept. SM., Marco Island, Fla. 33937.

Around the Mall and beyond

You are reading this (if at all) on or about Groundhog Day, a date that undoubtedly has atavistic origins which now are lost to us and which never meant much to the groundhog.

This stolid rodent, *Marmota monax*, hibernates very deeply, at least in the northeastern United States and Canada, and isn't about to haul back the covers for a look at the grim, gray world of February 2. However, this discussion of Groundhog Day leads neatly into the story of the prairie dogs at the zoo.

Speaking of Groundhog Day, a funny thing happened to the prairie dogs at the National Zoo. They got dug up while they were hibernating, that's what.

As everyone knows, the zoo is a superb organization that takes marvelous care of its inhabitants. It's staffed by concerned and highly qualified people and tenanted by charming animals and birds and reptiles. So what's all this, you ask, about rousing up some sleepy little prairie dogs?

Prairie dog digger reaches for hibernator.

A quiet car, a roaring success.

The New Chevrolet.

1979 Caprice Sedan in Silver Classic Custom Two-Tone.

If you can take your eyes off this handsome car long enough to go ride in one, you'll surely come away with a clearer understanding of why America has driven it to the top.

The quiet zone.

One of the most pleasing aspects of The New Chevrolet is the quiet way it moves. Why so quiet?

For one thing, its tightly welded Body by Fisher rests snugly atop a sturdy full-perimeter frame, joined by 16 strategically placed rubber mounts to help muffle road noise and vibration.

Inside, the ceiling is actually an "acoustical sandwich," with a thick layer of sound-absorbing polyfoam backed by hardboard and finished in fine fabric.

Oh so comfortable.

The ride is impressively smooth and comfortable.

Large coil springs at all four wheels help soak up the bumps, while a front stabilizer bar helps control sway.

And to add to your comfort, The New Chevrolet surrounds you with generous space. It's a 6-passenger car, with more head room and rear-seat leg room than the 1976 full-size Chevrolet it replaced.

An accomplished car.

No other new generation full-size car can match The New Chevrolet's record of success and accomplishment.

It became America's best-selling car within weeks of its introduction, in the fall of 1976.

It attracted more than a million buyers during its first two years.

And now, in its third big year, it is still clearly America's favorite car and the pacesetter for all other cars of its kind.

The New Chevrolet has paid its dues under diverse driving conditions on virtually every kind of road. Yet for all its success and experience, it is still one of the newest new cars on the market today.

Own it, love it.

Our feedback indicates a high level of owner satisfaction with The New Chevrolet.

What pleases the people the most? Things like ride, comfort, and ease of handling. Things you can easily check out for yourself when you test drive a New Chevrolet Caprice or Impala.

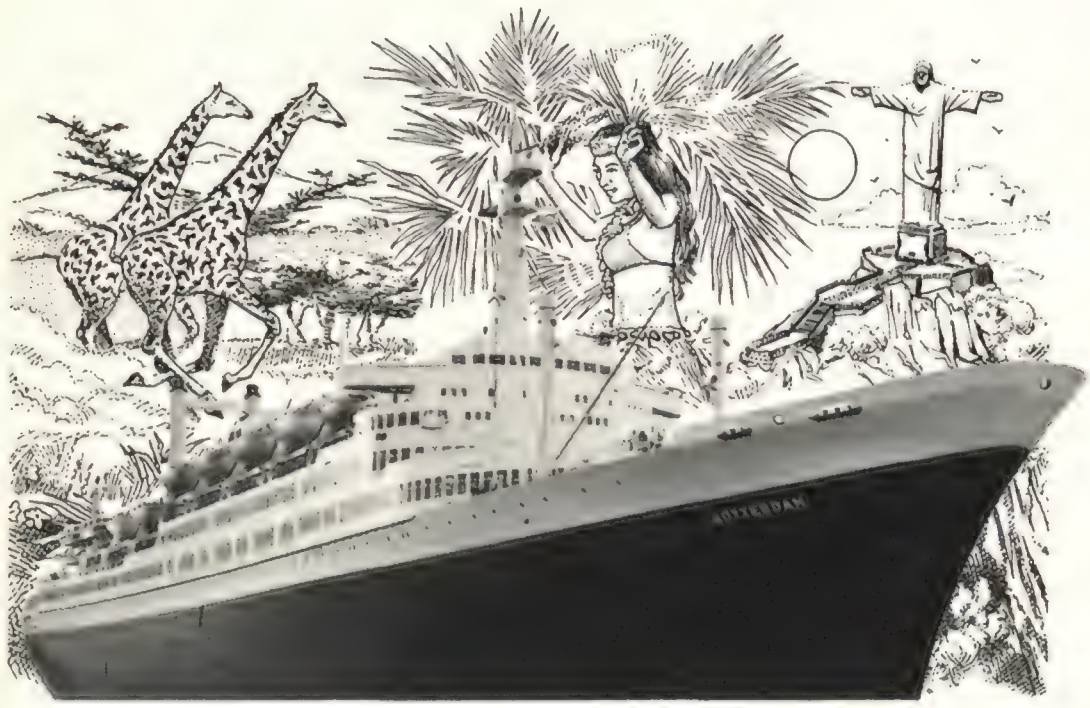
Do it soon, at your Chevrolet dealer.

America has driven it to the top. Chevrolet

s.s. Rotterdam departs January 9, 1980.

1980's Extraordinary World Cruise: to the South Pacific, Asia, Africa, and South America.

Come spend 100 of the sunniest, most memorable days of your life! Cruise in luxury to 25 exciting ports, including 16 new destinations for 1980.



Around the World to: Cartagena, Cristobal & Balboa, Acapulco, Los Angeles, Honolulu, Papeete, Mooréa, Suva, Madang, Manila, Hong Kong, Singapore, Colombo, Bombay, Seychelles, Mombasa, Zanzibar, Durban, Cape Town, Montevideo (also for Buenos Aires), Rio de Janeiro, Salvador de Bahia, Barbados, Havana.

Escape from Winter to those warm, friendly far corners of the world only Holland America knows so well. There's so much to see, and you'll see it all, on that most gracious of world cruise ships: the magnificent s.s. Rotterdam. Enjoy days and nights of Continental courtesy, charm, and cuisine...with superb entertainment. We sail West into the sun from New York, January 9; from Port Everglades, January 11; from Los Angeles, January 23.

See your travel agent or mail in the coupon below. s.s. Rotterdam: Netherlands Antilles registry.

79W2-79

Holland America Cruises
2 Penn Plaza, New York, N.Y. 10001

Tell me more about your 1980 World Cruise.

Name_____

Street_____

City_____ State_____ Zip_____

My travel agent is_____

Holland America
22nd World Cruise

A new and much-needed home is being built for the great apes, and it extends right into the old prairie dog village. So the little animals are slated to move into a new area next spring. But when the contractor got ready to move into the old village, the creatures were asleep. They had to be dug up.

It was a demanding job requiring help from curators as well as keepers. Shovels were very carefully wielded all over the village while the builders held off.

The zoo's colony consists of *Cynomys parvidens,* the Utah species of white-tailed prairie dogs. They are endangered in the wild; the zoo's population is seven. Strangely, they don't hibernate the way you'd think. Harold Egoscue, the zoo's mammalogist, says they coop up in mid-July—which is called aestivation—and roll out of the sack early in January. Apparently the aestivation results from food becoming scarce when summer dryness slows plant growth.

The babies are on a slightly different schedule because they don't emerge from their burrows until spring. That means they need a long time in the summer to get enough nutrition so they can get back below and turn in. There aren't any new babies among the zoo's seven animals.

Egoscue says the old village had about 30-odd burrows. Some were vacant and, like vacant homes anywhere, were beginning to deteriorate.

There were two main types of burrows, one an elaborate system going right back to the first settlement of the colony in 1971. All of the dogs were found here, buried in nests from 42 inches to 82 inches below the surface. The other type was a series of rather short emergency burrows that went along the curbing.

On the day of the Great Prairie Dog Dig, the first finds were all asleep, zzzzing away at the bottom of their holes. But as the excitement grew, and the spades came closer to the last unfound animals, they started to wake up. They were pretty wobbly, Egoscue says, but aroused.

The last one, however, was wide awake by the time it was found. And apparently it didn't want to leave at all. Fussing and swearing, it was caught anyway, and bustled off with its fellows to the small mammal building, indoors, where they've all settled down again. All are fully awake, but one is pretty sleepy still.

In the spring, these evicted tenants will move into their new home, a hillside area

Why not? She'll probably love it.

12 YEARS OLD WORLDWIDE · BLENDED SCOTCH WHISKY · 86 PROOF · GENERAL WINE & SPIRITS CO., NEW YORK, N.Y.

WATCH CAP FACE SAVER

Worn rolled-up it's a super-warm watch cap. Pulled down it shields your face, ears and neck and holds warmth in. Knit from 2 layers of 100% wool, it's ideal for cold weather hikers, sailors, hunters and fishermen. **Colors:** Navy, Orange, Green, Brown, Camouflage. One size fits all. #1753 Watch Cap $5.95 postpaid.

Order Today! Money Back Guarantee!

Enclosed is my check or money order for $ _____
(Add sales tax where applicable)

☐ #1753 Watch Cap. Color _____

Name _____

Address _____

City _____

State _____ Zip _____

☐ Send me FREE your unique color catalog of quality outdoor apparel and equipment.

Eddie Bauer

Dept. WSS, Third & Virginia, Seattle, WA 98124

clone

Webster's New Collegiate Dictionary.

It's where the words live.

FROM MERRIAM-WEBSTER®

© G.&C. MERRIAM 1978

Guayabera Shirt

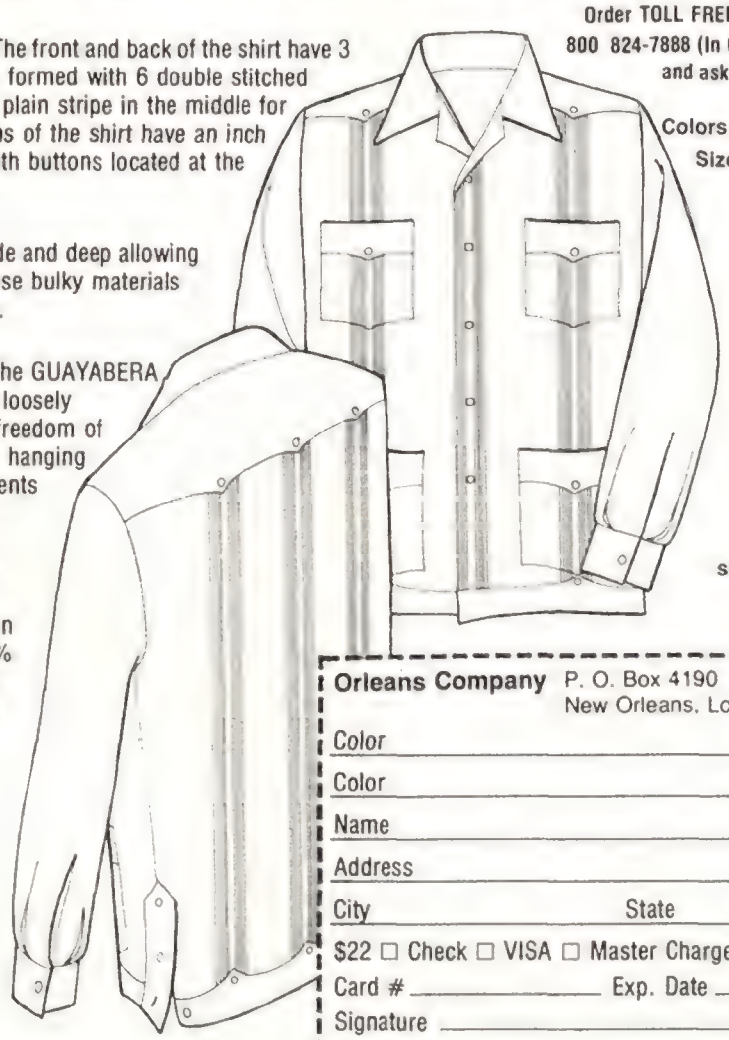
For decades the GUAYABERA shirt has been synonymous with graceful and casual living in Latin America. The elegant design and casually free tailoring will insure confidence in your dress and appearance turning a simple evening into an event.

Intricate design — The front and back of the shirt have 3 pleats. Each pleat is formed with 6 double stitched folds with a ¼ inch plain stripe in the middle for balance. The bottoms of the shirt have an inch and a half border with buttons located at the ends of the pleats.

4 pockets — are wide and deep allowing you to carry otherwise bulky materials with ease and grace.

Comfortable fit — the GUAYABERA is designed to wear loosely allowing maximum freedom of movement. The free hanging shirt has two side vents with 3 slits which may be unbuttoned to adjust to your particular build. As the evening wears on the 65% dacron-35% cotton GUAYABERA will keep its shape and fresh look.

Imported by ORLEANS COMPANY, New Orleans, Louisiana.



Order TOLL FREE (credit cards only)
800 824-7888 (In Calif. 800 852-7777)
and ask for Operator #445

Colors: White and Lt. Blue
Sizes: (neck/sleeve)
S 14-14½/33
M 15-15½/34
L 16-16½/35
XL 17/36
XXL 17½/37

$22.00
(Includes post.)

Satisfaction guaranteed or full refund. We make no sleeve alterations.

Orleans Company P. O. Box 4190 5007 River Road
New Orleans, Louisiana 70178

Color _____ Size _____

Color _____ Size _____

Name _____

Address _____

City _____ State _____ Zip _____

$22 ☐ Check ☐ VISA ☐ Master Charge

Card # _____ Exp. Date _____

Signature _____

within the newly designed North American mammal complex. It's too complicated to try to describe just where that is going to be, but zoo plans call for it to be finished in 1979, so, if it stays on schedule, it won't be long before you can go and see it. When you do, you'll find the Utah prairie dogs forming the first exhibit. With any luck they will have forgotten how they were tossed out on the street with all their furniture back in December.

This photograph is of a clay tablet bearing a cuneiform inscription. It says, "Nalu received 1 lamb from Abbashaga on the 11th day of the month of the festival of An, in the year Enmahgalanna was installed as high priestess of Nanna."

This, according to Professor Robert Biggs of the University of Chicago, is a common type of tablet from a southern Iraq site called Drehem, a livestock cen-

Baked clay tablet called Chief Joseph's.

ter 4,000 years ago, where this kind of transaction took place all the time. "An" was a god; "Nanna" was the moon god. The receipt was written in the fourth year of the king Amar-Sin, which makes it about 2042 B.C.

So what's so great about a rather everyday archaeological item? Well, it seems this little tablet was one of the personal belongings of Chief Joseph, the ill-fated leader of the Nez Perce Indians.

I wrote about Joseph and the Battle of the Big Hole in this magazine last May. I knew then a little about the tablet, but couldn't see how to bring it into the story.

But Joseph J. Snyder, anthropology editor in the National Park Service, wrote up the whole story of the tablet for me to

Wilderness and Multi-use lands. Can they live side by side in the public forest?

At Potlatch, we recognize the need for Wilderness areas. Areas where "man is a visitor who does not remain." It is part of our heritage that deserves to be protected.

But we must also look at Wilderness areas for what they are—places where roads and motor vehicles are barred, where nearly all types of structures and facilities such as campsites are forbidden, and where timber harvesting and other commodity activities are prohibited.

For all the romantic allure, the Wilderness attracts very few people, since they can only venture there on foot, horseback or by canoe.

Multi-use public forestlands, on the other hand, serve a much broader segment of the population. Here, campers, snowmobiles and outboard motors are allowed, improved campsites and timber harvesting under government regulation are permitted.

The continuing expansion of the Wilderness through legislation, at the expense of Multi-use lands, threatens eventually to remove from America's timber resource any hope of meeting America's growing need for either forest products or modern group recreational activities.

Wilderness. Multi-use. Potlatch believes, with balance, we can have all we need of both.

Potlatch Corporation, Public Information Office, P.O. Box 3591, San Francisco, CA 94119.

Potlatch

We grow the working trees.

NEVER BEFORE — has pure gold been added to the high relief of the aristocrat of all United States silver coins — *The Morgan Silver Dollar*. These are beautiful rare coins *not* newly created medals.

Introduced 100 years ago in 1878, these coins are currently amazing the numismatic world with startling advances. Add to this — a miraculous new patented process, by Jimmy Chin, that etches 24 Karat Gold onto the coin — *with extreme precision*.

Spectacular and different — more interesting than silver or gold alone! The necklace at $89 is reversible and comes complete with a handsome 12 Karat Gold filled frame and 24" chain (27" endless for men). Our money clip has a patented spring action. The clip will never tarnish and the beautiful Rhodium finish will give long, hard wear. They are just $35 — the set is $124.

These coins are available only by direct order from Cartwheels, Inc. and you will receive a numbered Certificate of Authenticity with each coin. All are gift wrapped.

CARTWHEELS, INC.
2500 Grubb Road
Wilmington, DE 19810

Order TOLL FREE
1-800-441-7666

Send: _____Necklaces, _____Money Clips, _____Sets
Check Enclosed $_____ Charge My Credit Card $ _____
Card# _____
Exp. Date_____ Telephone # _____
Name _____
Address _____
City_____ State _____ Zip_____

crib from, and that's what I'm doing now, because it really *is* interesting to speculate how the leader of a band of Indians in the Northwest happened to have an ancient cuneiform tablet in his possession.

Snyder says that the tablet was included in the collection of Joseph's personal items which was sent to the Park Service for display at Big Hole National Battlefield, Montana. An accompanying card called it a Nez Perce "pictograph" brought from Fort Keogh, Montana, in 1878 or 1879 by C. S. Heintzelman, an army officer who had fought in the Nez Perce War. Heintzelman's son donated the tablet to the museum at West Point.

If the tablet really belonged to Chief Joseph, how did he get it? Did some missionary or tourist present it to him? That might make sense, because Joseph was much admired after the bloodshed was over, but the theory is confusing. Professor Biggs says that such tablets didn't hit the market in numbers until about 1909, 30 years after Heintzelman produced it.

It seems slightly more likely that the tablet was simply mistakenly dated. The younger Heintzelman graduated from West Point in 1899. Perhaps, ten years later, he got it from a friend (the tablets would have been purchasable by then) and the information about it could have been confused or perhaps twisted by exaggeration, as such things often are. After all, the old notion that American Indians were descended from the lost tribes of Israel was still kicking around (although discredited) in the early 1900s. It might have struck someone as amusing to use the cuneiform as "proof" of the theory. But if this were a carefully worked out hoax, that lone tablet wouldn't have been very convincing proof of the Indian-Near Eastern link. As Joseph Snyder says, it would be like a modern American handing on a shred of an old income tax return as a family heirloom.

So, no one really knows how or why this small archaeological item wound up at West Point. We know much more about its long-ago past, when Nalu got that lamb from Abbashaga.

The puppet theater in the Arts and Industries building is in operation through this month, having started packing 'em in around the turn of the year. I haven't checked their playbill but, like everyone on the staff of this magazine, I am aware

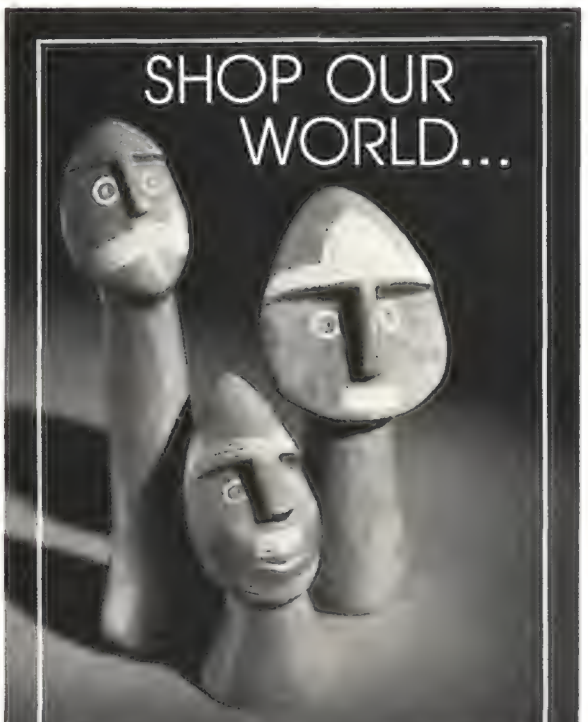
Goebel®

hand-crafted solid crystal by renowned Charlottenhütte, the name prized by collectors!

A joy at Easter time, a treasure for life because it's genuine Goebel! Charmingly detailed bunny with basket, ideal for holding one lavish egg, for heaping with jelly beans or flowers. Heavy solid crystal 4½" high, basket 1½" across, our own West German import.
9398 Goebel Bunny-Basket $14.98

Add $1.50 post. & hdlg. NY res. add taxes. Master Charge or Visa: send card number, exp. date, Master Charge Interbank number.

LILLIAN VERNON®
Dept. T24, 510 S. Fulton Ave., Mt. Vernon, NY 10550



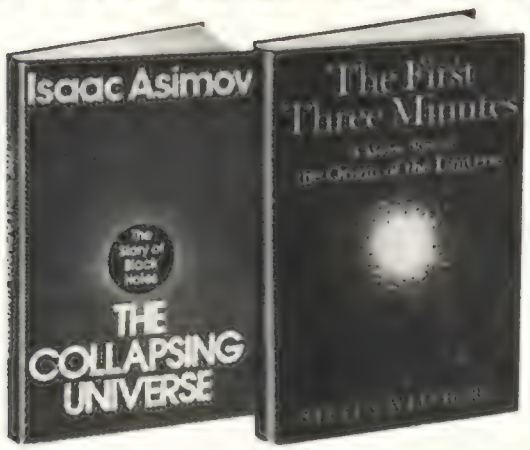
beginning with these handcarved soapstone figures. Crafted by the Berbers of Morocco, they range from 4 to 7 inches tall. $16.50 ppd.
Then continue on to Europe, the Orient . . . over thirty countries' fine handcrafts are displayed in our full color 48 page catalog, yours for 50¢.

shopping international®
165 Shopping International Bldg.
norwich, vermont 05055

The cosmic frontiers of general relativity... stellar evolution...colonies in space... black holes, quasars, and the universe...

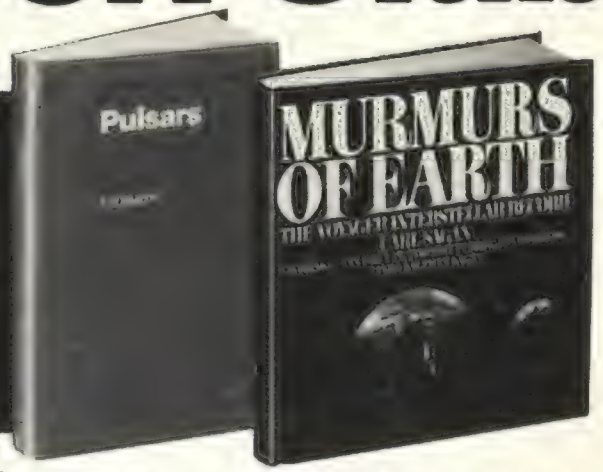
Sooner or later, all of the secrets of the heavens are revealed in the *only* book club of its kind, the

Astronomy Book Club



Take any 3 books (values to $69.35) for only $1.00 each

if you will join now for a trial period and agree to take 3 more books—at handsome discounts—over the next 12 months



36395. BLACK HOLES, QUASARS AND THE UNIVERSE. *Henry L. Shipman.* **$15.50**

49240. FROM VINLAND TO MARS. *Richard S. Lewis.* A sweeping history of a thousand years of exploration. **$15.00**

69325-2. THE PLANET WE LIVE ON. *Edited by Cornelius S. Hurlbut, Jr.* Illustrated, information-rich encyclopedia of the earth sciences. 1,800 entries. *Counts as 2 of your 3 books.* **$37.50**

69303. PLANETARY ENCOUNTERS. *Robert M. Powers.* The case for all-out exploration of our solar system in this century. **$13.95**

72995. PULSARS. *F. G. Smith, F.R.S.* A concise look into the major topics in pulsar astrophysics. **$19.95**

Basic Astronomy Library

Here's a carefully selected set of five books that will provide you with a basic, well-rounded astronomy library. First, Henry L. Shipman's outstanding **THE RESTLESS UNIVERSE**—a more than 450-page tour of the ideas, principles, and processes of modern astronomy, containing more than 250 illustrations and tables. Then, a marvelously readable overview of the latest advances in the "new astronomy," Shipman's **BLACK HOLES, QUASARS, AND THE UNIVERSE.** Next, Richard S. Lewis's sweeping survey of man's place in space, **FROM VINLAND TO MARS.** Then, an unequaled field guide to the heavens, **WHITNEY'S STAR FINDER.** Finally, a just-published reference that's going to become a "must" for any astronomy reader, the **ILLUSTRATED ENCYCLOPEDIA OF ASTRONOMY AND SPACE.** Publishers' price for 5-book set: $69.35. *Counts as 3 of your 3 books.* To order check **BASIC ASTRONOMY LIBRARY** on your coupon.

57833. THE LAROUSSE GUIDE TO ASTRONOMY. *David Baker.* A thorough summary of the universe. Packed with color photos and illustrations. **$15.95**

79735. SPACESHIPS OF THE MIND. *Nigel Calder.* Scientifically plausible proposals for man's self-directed evolution, his colonization of space, and the restoration of the earth to a more natural state. **$14.95**

63217. MURMURS OF THE EARTH. *Carl Sagan et al.* The story of the recorded messages carried by the *Voyager* space probe, man's first attempt at interstellar communication. **$15.00**

55000. THE ILLUSTRATED ENCYCLOPEDIA OF ASTRONOMY AND SPACE. $16.95

80585. STELLAR EVOLUTION. *A. J. Meadows.* The modern theories of the origin and evolution of stars explained in understandable language. **$16.50**

53015. THE HISTORICAL SUPERNOVAE. *Clark and Stephenson.* First detailed study of supernova remnants based on historical observations, particularly Far Eastern. **$16.50**

80250. STARS: Their Birth, Life, and Death. *Josif S. Shklovskii.* **$17.50**

73939-2. THE RESTLESS UNIVERSE/ WHITNEY'S STAR FINDER. *Set counts as 2 of your 3 books.* **$21.90**

46860. EXPERIENCING SCIENCE. *Jeremy Bernstein.* A collection of "hard" fact reporting and insightful commentary. **$11.95**

64157-2. THE RAND-McNALLY NEW CONCISE ATLAS OF THE UNIVERSE. *Patrick Moore.* Nearly 1,000 illustrations, 400 in spectacular color. *Counts as 2 of your 3 books.* **$29.95**

MEMBERSHIP BENEFITS • In addition to getting either three books for only $1.00 each or the BASIC ASTRONOMY LIBRARY for $3.00 when you join, you keep saving substantially on the books you buy. • Also, you will immediately become eligible to participate in our Bonus Book Plan, with savings of at least 70% off the publishers' prices. • At 3-4 week intervals (16 times per year) you will receive the Book Club News, describing the coming Main Selection and Alternate Selections, together with a dated reply card. In addition, up to 3 times a year, you may receive offers of special selections, always at substantial discounts. • If you want the Main Selection, or the special selection, do nothing and it will be mailed to you automatically. • If you prefer another selection, or no book at all, simply indicate your choice on the card, and return it by the date specified. • You will have at least 10 days to decide. If because of late mail delivery of the News, you should receive a book you do not want, we guarantee return postage.

48601. THE FIRST THREE MINUTES/THE COLLAPSING UNIVERSE. Fascinating tour of the universe through its expansion and evolution. *Plus,* the investigation of the most mystifying of astronomical phenomena—the black hole. *The 2 count as one book.* **$17.90**

40685. THE COSMIC FRONTIERS OF GENERAL RELATIVITY. *William J. Kaufman.* Nontechnical introduction to post-Einsteinian physics. **$12.95**

79725. SPACE TREK: The Endless Migration. *Glenn and Robinson.* Presents the economic, political, and philosophical effects of space colonization. **$9.95**

59690. MAN AND THE STARS. *Hanbury Brown.* Complete and thoroughly entertaining history of man's constant fascination with the secrets of the heavens. **$14.95**

62375. MESSAGES FROM THE STARS. *Ian Ridpath.* The existence of extraterrestrial life and the efforts being made to establish interstellar communications. **$10.00**

(Publishers' Prices shown)

Astronomy Book Club L-A2C
Riverside, New Jersey 08370

Please accept my application for trial membership and send me either the three volumes indicated, billing me $1.00 each, or the BASIC ASTRONOMY LIBRARY, billing me only $3.00. I agree to purchase at least three additional Selections or Alternates during the first 12 months I am a member, under the club plan described in this ad. Savings range up to 30% and occasionally even more. My membership is cancelable any time after I buy these three books. A shipping and handling charge is added to all shipments.

☐ Check here if you want the Basic Astronomy Library (35563).

☐ Check here if you prefer three other volumes for $1.00 each, and indicate below the numbers of the books you want.

A few expensive books (noted in book descriptions) count as more than one choice.

Name _____

Address _____

City _____

State _____ Zip _____

(Offer good in Continental U.S. and Canada only. Prices slightly higher in Canada.)

Shop Europe
Shop Shannon

Our latest catalogue lists treasures from the far corners of the world . . . at dream-come-true prices.

Irish, Swedish and English Handcut Crystals, English Fine Bone Chinas, German Beersteins and Porcelain Figurines, French Perfumes, Irish Fisherknits, Scots Cashmeres, Irish Linens, Italian Wood Carvings and much more.

Full colour illustrated catalogue AIRMAILED to U.S.A. or Canada for $1 (deductible).

We accept Bankamericard, Mastercharge, American Express and Barclaycard credit charges. Money back guarantee.

Write now

Shannon Mail Order Dept W7
Shannon Airport, Ireland.

Name .....

Address .....

City .....

State ..... Zip W7

The English Wine Table $19.

Our English wine table (c.1784) is an authentic reproduction of a fine old English antique, hand crafted of mahogany with soft detailed leathery top. A traditional favorite in England for over 200 years. Priced directly from our factory at an astonishing $19. $38 for two. Please add $3 each for shipping and handling. Dimensions: 20" high, 13" diameter. Naturally your satisfaction is guaranteed. To expedite your order, telephone us or send check or money order or charge MC/BA-VISA, DC. Please incl. your exp. date. Send $2 for our full color product publication.

The Bombay Company
P.O. Box 53323—Dept. S6
5256 Magazine Street
New Orleans, La. 70153
Telephone: 504/891-4405

© 1978 TDK Electronics Corp.

TDK introduces high fidelity for the eyes.

When TDK's engineers set out to make a video cassette for home use, they started with the tape they developed for professional broadcast use and *improved* it, so it could stand up to the rigors of four-hour home recording. In *any* deck, TDK Super Avilyn VHS and Beta cassettes offer performance so superior, that they are ushering in a new era in home video: the age of "high fidelity for the eyes." TDK Electronics Corp., Garden City, NY 11530.

TDK
Video Cassettes

of the puppet theater. Their rehearsals, and later their performances, somehow get piped into our editorial offices through air-conditioning ducts.

I remember the time a photographer showed up to display his samples in the hope of getting some free-lance work. Our picture people warned him that we have high photographic standards, and we hew to them sternly. We are quick, he was told, to toss back "takes" that don't match up, and we may seem to be almost brutal in our critical judgment.

Thus briefed, he bravely produced his portfolio, and all heads began to bend over the light table. And just then, some of the sounds of a puppet performance or rehearsal began to reverberate. There were distant cries of anger: "A-A-ARGHHH!" and "BAAAAAH!" and then there were muffled low tones and then a great roar of rage: "GRROWWWKK!" followed by a chilling scream that rattled the glass in the windows.

The photographer looked up uncertainly, but no one else paid any attention.

"BRAAAAFF!" bellowed the distant ogre. "EEEERRK!" screamed the faraway victim.

The photographer paled and shifted his feet restlessly.

"NO!" shouted the unseen villain, quite distinctly, and at that, the photographer hastily cut short his interview and gathered up his gear. He never came back to risk his art in front of the mysterious downstairs editors who had expressed their opinions so vehemently.

—Edwards Park

Picture credits

Cover courtesy California Museum of Photography; 14 courtesy National Gallery of Scotland, Edinburgh; 27 John M. Richards; 30 © 1978 Human Nature, Inc.; 32 National Zoological Park; 36 Helen Schreider; 42-45 Ralph Crane; 46, 47 Nigel Holmes; 49 Richard M. Bryant; 50-54 Ralph Crane; 55 Bill Graham; 56-62 Charles E. Rotkin; 64 courtesy Robert Satiacum; 65 Charles E. Rotkin; 68, 69 Arthur Shilstone, *Herblock's Here and Now* (Simon & Schuster, 1955); 70, 71 Arthur Shilstone, Ernst Haas, Arthur Shilstone; 72 courtesy Estate of Albert Einstein; 73, 74 Philippe Halsman; 77 Richard A. Meek; 80 Arnold Newman; 82, 83 Yale Joel; 85 Yale Joel, Flip Schulke; 88-95 California Museum of Photography; 96 Alexandre Georges, (right) courtesy John Barnard; 97 David Martindale; 98 Granger Collection; 99 courtesy Inland Storage and Distribution Center; 100 David Martindale, (right) Ross Chapple; 102 courtesy John Barnard, Alexandre Georges; 104 David Martindale; 105 Thomas Bligh; 106-108 Peter B. Kaplan; 110-117 Dmitri Kessel; 119-130 Shelly Grossman; 144 Victor E. Krantz; 145 Dane A. Penland; 151 Smithsonian Institution; 152 Yoichi R. Okamoto; 153 James T. Hayden; 154 Smithsonian Institution; 156 Mike Ramus.

HOW THE BELL SYSTEM OVERSEES 40 MILLION LONG DISTANCE CALLS A DAY.

ON AN EASY DAY.

The Network Operations Center, Bedminster, New Jersey.

You are looking at the Bell System's Network Operations Center. Here, our technology and people work 24 hours a day to help your long distance calls go through quickly, effortlessly.

When you make a long distance call, it has several different routes it can take, automatically.

But sometimes traffic gets particularly heavy. We can get a bottleneck.

That's when the people of the Network Operations Center move in. Using the most advanced Bell System computer technology, they re-route the traffic to get your call through.

In round numbers, the Network Operations Center helps manage nearly 40 million calls, on a normal day. At busy times on busy days, the volume surges even higher.

So come Christmas or Mother's Day, hurricane or high water, virtually every long distance call you make goes through quickly and easily.

Thanks to all the people of the Bell System.

Part of the network status board, where NOC personnel watch for possible jam-ups.

No matter when you make your long distance call, the NOC stands ready to help it get through without a hitch.

Bell System

Keeping your communications system the best in the world.

The principal deities of Carthage were the goddess Tanit, often depicted with a lion's head (center and left rear), and the god Ba'al Hammon (lower right), crowned with feathers. The bigger of the two Tanits is about five feet tall, and insignificant Ba'al only a foot. These figures date from the end of the first century A.D., after the fall of Carthage, when the old Phoenician cults were kept alive by remnants of the population who had fled from the Roman invaders.

Musée du Bardo, Tunis

By Dora Jane Hamblin

'Carthage must be destroyed!' It was, but now it is reappearing

It had been obscured by the Romans, Vandals, Byzantines and modern urban sprawl. But today ten national teams try to save what's left

Musée de Carthage

Punic gold coin from between 340 and 242 B.C.; horse was used as a symbol of the city on many Carthaginian coins.

"Carthago non delenda est," proclaimed the headline of a newspaper tacked last summer to the bulletin board of a white villa in the Tunis suburb of Khéreddine. Appended below the clipping was a list of 26 reasons why Carthage is not being destroyed: the names of members of the joint University of Chicago-Harvard excavation team at the site. The headline, of course, refers to the repetitious admonition of Cato the Elder, who, to some Romans of more than 2,000 years ago, must have seemed an old scold. This group, headed by Lawrence E. Stager of Chicago's Oriental Institute, was one of eight, including a team from the University of Michigan, working the 1978 season in response to a UNESCO "Save Carthage" campaign.

By choice and by luck, the Chicago-Harvard team was assigned two of the most intriguing elements of the metropolis that dominated the western Mediterranean for nearly half a millennium—the rectangular commercial harbor used by the traveling salesman of those days, and the Tophet, the brooding, sanctified area dedicated to the deities Tanit and Ba'al Hammon, in which the citizens of Carthage buried the charred bones of their own sacrificed infants.

A British team led by Lancaster University's Henry Hurst works close by on the equally famous circular military harbor and its adjacent ship sheds, quays and tumbled building remains.

A French team has exposed third-to-second-century B.C. Punic houses on the slope of the Byrsa hill which dominates the site. A West German team is correcting ancient accounts of total Roman destruction by uncovering sprawling Punic villas by the sea, supposedly razed 2,000 years ago (p. 55). The site is unique in that

Musée du Bardo, Tunis

This terra-cotta mask, about 14 inches high, is Sphinx-like version of Tanit. It is dated from the sixth century B.C.

Color photographs by Ralph Crane

Chicago-Harvard dig at mercantile harbor shows five separate layers. Botton three are Punic, fourth is either Punic or Roman, and top one is Byzantine.

it reveals a Punic residential area quite different from the smaller houses on the slopes of the Byrsa.

The University of Michigan group, headed by John H. Humphrey and John G. Pedley, is excavating a long, flat 100-by-400-meter field which lies between the circular harbor and the Byrsa, and which was trenched in 1971 by alert Tunisian archaeologists to establish the presence of ancient remains and to circumvent the construction of private villas. Though the area is known to have been densely inhabited in Punic times, then destroyed and rebuilt in the middle of the first century A.D., the Michigan team is concentrating on the later history of the city, the Vandal and Byzantine periods from about A.D. 400 to the Moslem destruction

. Lawrence E. Stager of Chicago's Oriental Institute studies plan of site. This trench contains some Roman foundations, probably of grain storehouses.

in 698. One of their fascinating finds, reported first in the university's excavation volumes I-II, was a Roman peristyle house dubbed the "House of the Greek Charioteers" because of a handsome mosaic pavement which they turned up on the threshold of the dining room (p. 52). Built and rebuilt repeatedly, the house showed a continuity of habitation for almost 300 years.

A Canadian team working in two groups (one French-speaking, the other English-speaking) has also tackled relics of the later Roman period (late fourth-early fifth century A.D.).

The Tunisian National Institute of Archaeology and Art, directed by M. Azzeddine Beschaouch, is still making rescue digs on private building sites, supervising the whole program and cataloguing finds. They are also deep into plans for turning the entire area, more than a thousand acres, into a national park which will include the archaeological remains.

Nobody has an easy job. Carthage has been often described as the most difficult classical site in the world owing to waves of destruction and overbuilding, centuries of stone-robbing, and sometimes inept archaeology. Yet never was it so threatened by oblivion as it became 20 years ago. In 1956 tiny Tunisia, roughly the size of Louisiana, won independence from France, and the capital city, Tunis, began to balloon in all directions. Rich Tunisians rushed to put up villas near the

Dora Jane Hamblin, who lives in Italy, writes frequently for SMITHSONIAN*—most recently about the efforts to save Venice (November 1977).*

French team excavates Punic houses on the Byrsa. Construction technique is known as *opus Africanum*—stone columns with rubble "fill" between them.

British group is working on circular naval harbor. This is the island where Carthaginian admiral could have a tall house from which to see enemy ships.

water, often on top of Carthaginian ruins and cemeteries. This kind of peaceful invasion can be, for archaeologists, more permanently destructive than war.

The international campaign came about almost by accident. In the early 1970s a UNESCO team began a study of urban development in Tunis. Its specialists quickly noted the outflux toward Carthage and sounded an alarm. Acting under now-conventional and effective ground rules, UNESCO provided no money but the clout and prestige to trigger worldwide response (see "Maladies of Venice," SMITHSONIAN, November 1977). Tunisian authorities agreed to accept foreign archaeologists with proper credentials. In the United States, some funds came from the Foreign Currency Program (blocked funds left over from credits given in World War II), administered by the Smithsonian Institution. Danes and Italians spent several seasons in the field. Iron Curtain countries also responded. Among the first into the field were Polish archaeologists, who made surveys of buried masonry by sophisticated soundings with a proton magnetometer. A Bulgarian team explored a Byzantine church.

Partly their urge was romantic, there being few more romantic names than Carthage, but mostly it was curiosity to discover what was true and what was not true about this near-legendary city which had been a hotly contested piece of real estate since 814 B.C.

It was on or about that date that a Phoenician princess named Elissa fell out with her younger brother Pygmalion (a Greek corruption of Pummay-yaton), king of Tyre, in what is now Lebanon. Elissa was married to their uncle, Archabus (Zakar-baal in Phoenician), who was also high priest of Tyre. Pygmalion had the uncle murdered and ordered that his considerable fortune be sequestered. Under the pretext of collecting the fortune and presenting it in good order, Elissa used the money to outfit a fleet, marshal her supporters, and flee with them to Cyprus. There she gathered up another high priest and 80 maidens to serve as temple prostitutes, and headed west.

The party made landfall in what is now in Tunisia; and there, the story goes, Elissa bargained with a local chieftain for ownership of as much land as an oxhide would cover. The wily Elissa had the hide cut into the thinnest possible strips and encircled an astonishing amount of territory. Legend has it that she wrapped the strips around the hill still called Byrsa ("byrsa" means "hide" in ancient Greek). It is a moot question whether the Byrsa was the site of the original Phoenician settlement: a canny immigrant might have been expected to stay closer to the harbor.

Elissa (who is the Dido of Virgil's *Aeneid*) had little time to guide the rise of the struggling colony of Qart Hadasht ("new city" in Phoenician), because shortly after its founding a local chieftain became enamored of her and demanded her as a bride. For reasons unclear—whether to avoid him, or perhaps to save her colony—she prepared a funeral pyre, climbed on it, stabbed herself and was cremated.

Elissa, Pygmalion and Archabus are historical figures and the date of 814 B.C. is not out of line with their chronology, but the fact is that archaeologists

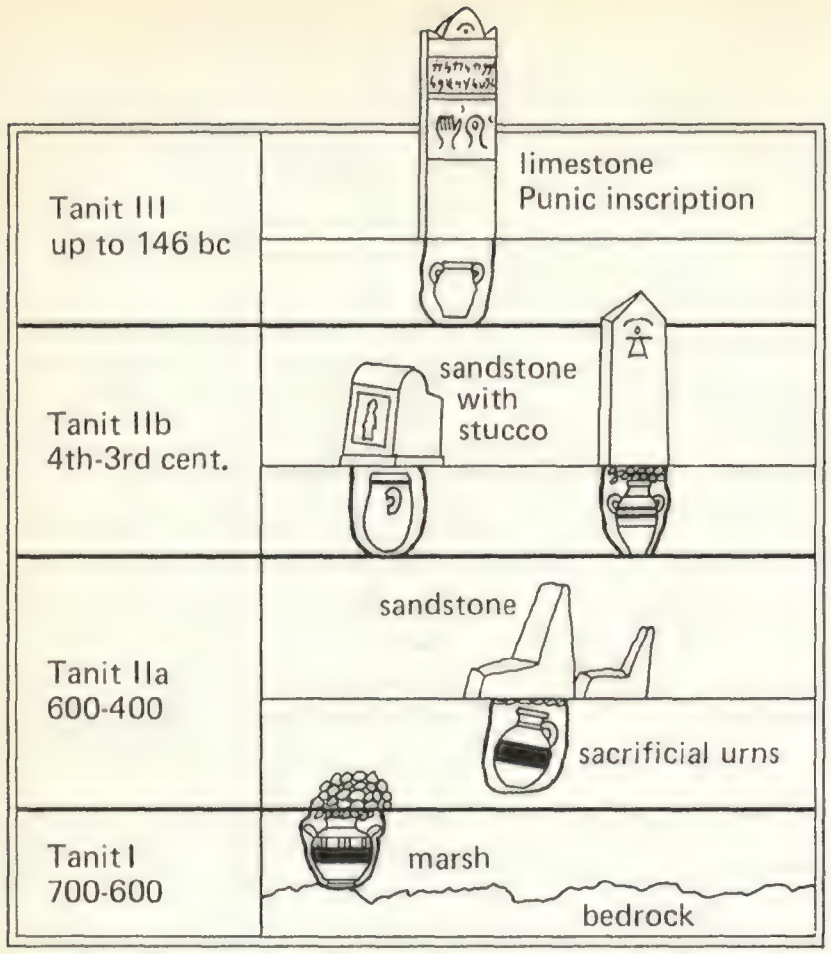


Diagram depicts excavated levels of the Tophet, or the sacred "Precinct of Tanit," where Carthaginians sacrificed their children. Urns contain ashes, topped with increasingly elaborate memorial stelae.

have found nothing that can be dated earlier than about 735 B.C. Though Carthage dutifully sent tribute to the home city of Tyre for many years, she established herself as the dominant power of "Phoenicia West," a network of cities and trading posts stretching westward from Leptis Magna in present-day Libya across North Africa to the Straits of Gibraltar. To the north, her domain included settlements in Sicily and Sardinia. Carthage's early supremacy was achieved through trade; only later did she exert widespread political and military control.

Carthaginian cargo ships, fat little craft only three or four times as long as they were wide, had a very high bow and stern, and a single mast set amidships (p. 53). These vessels beat the seas as far east as Egypt, Rhodes, Cyprus and the Levant. Often they carried finished goods produced at home—woven cloth, metalwork, agricultural produce—but just as often they acted simply as traders, middlemen ferrying produce from one country or port to another and turning a profit in every one.

They made amazing voyages of exploration. Herodotus describes how some Phoenicians circumnavigated the entire continent of Africa in 600 B.C., starting in the Red Sea and going clockwise in a voyage which lasted three years. Then there were Hanno and Himilco, both of whom sailed about 450-425 B.C. Hanno made a daring trip west from Carthage, past Gibraltar

This aerial photograph, taken some years ago, shows the site of Carthage covered with modern villas and other structures. Broken red lines indicate areas in which various national teams are digging in response to UNESCO "Save Carthage" campaign.

They are: 1, Polish; 2, British; 3, American; 4, French; 5, German; 6, Italian; 7, Canadian; 8, Bulgarian; 9, Tunisian; and 10, Danish. Blue outlines and letters indicate visible remains or known sites of ancient features of the city: A, Roman amphitheater; B, Cisterns of La Malga; C, Roman circus; D, the Byrsa; E, a rotunda; F, Roman theater; G, Roman odeum; H, Tophet; I, mercantile port; J, military port; K, the Baths of Antoninus. The two ports are today shallow, stagnant lagoons.

The 'reappearance' of Carthage

and down the west coast of Africa as far as modern Senegal. Himilco, whose voyage is less well documented, went west to Gibraltar, then turned north to cruise the coast of modern Spain and reach Britain.

Famous as their trading ships were, it was the Carthaginian navy that struck terror in Mediterranean hearts. Their warships were long, low and narrow, and had a sharp narrow prow which could shatter the oars of opposing vessels if they passed close enough, and underwater at the bow a long pointed ram for punching holes in the hulls of opponents. So skilled were Carthaginian oarsmen that many a land power, quite notably Persia, hired both boats and crews to aid them in their wars.

At first Carthage paid little attention to Rome, but in 509 B.C. she signed a treaty with the fledgling republic in which both powers defined their relative spheres of commercial and political influence and pledged mutual respect.

Carthage rapidly expanded its area of control east and west along the African coast, inland into the continent, in Sardinia and in Spain (which grew so important that eventually a "New Carthage" was established there). There were also more treaties with Rome, and one occasion in which the two became allies, in 276 B.C., to expel from Sicily their common enemy, Pyrrhus, king of Epirus.

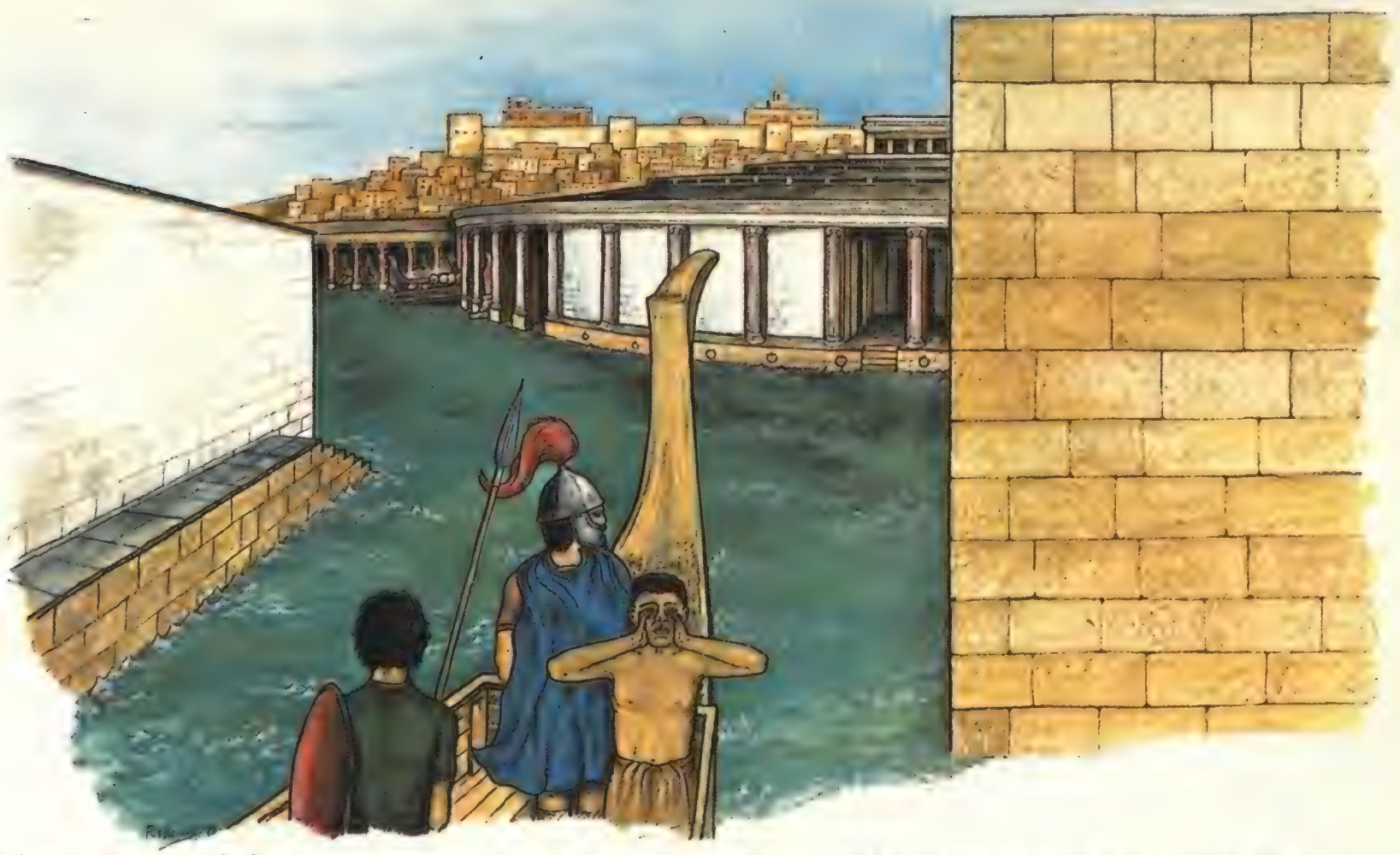
With the defeat of Pyrrhus, however, the two superpowers were left face to face and very shortly the Punic wars broke out. The first lasted from 262 to 241 B.C., the second from 218 to 202. Rome very nearly lost that one because of the exploits of the Carthaginian general Hannibal and those much-publicized elephants with which he crossed the Alps. Hannibal administered two humiliating defeats to Rome in the battles of Lake Trasimene and Cannae, but he was eventually bested by the other great hero of the Second Punic war, Scipio Africanus. Ironically, even in defeat Carthage gained its most implacable enemy, the redoubtable Cato the Elder. Cato was sent to Carthage in 175 B.C. on official business and was appalled to see how the humbled city had recovered from the destruction and punishing tribute exacted after 202. From that day in 175 until his death in 149 B.C., it is said, Cato ended every speech he ever made, on any subject whatever, with the thunderous admonition: *"Ceterum censeo delenda est Carthago"* ("In my opinion, Carthage must be destroyed").

Cato didn't live to see the day he longed for, a final stunning Roman victory in 146 B.C. after a three-year siege. The victors gloated that they had pillaged the city, burned it to the ground, killed or captured all its citizens, plowed over the rubble, even sowed salt so that nothing could grow again. Archaeological evidence tones down somewhat the ferocity of this account. There is indeed a layer of burned material from one to several feet thick at most excavation sites, particularly in the port areas. But the Punic cisterns, sleek and smoothly lined and obviously used later by the Romans, have emerged under the shovels, and Punic street plans were preserved and used as patterns in many cases for Roman building. The area of the Tophet, which horrified the Romans because of the infant sacrifices, was covered up and built over.

Capital of the Roman "breadbasket"

The truth was that the site of Carthage was far too valuable to be "plowed over" and many a Roman knew it. One was Caius Sempronius Gracchus, who was among other things an agrarian expert and recognized the possibilities of turning "the African province" into a Roman breadbasket. Carthaginians had made both their promontory and interior holdings into immensely productive agricultural areas which yielded tons of barley, cereal grains, olives, grapes, fruits of all kinds, and nourished flocks of sheep and goats and herds of excellent cattle. Caius Gracchus tried to found a Roman colony in Carthage only 24 years after its destruction, in 122 B.C. This venture failed, but another attempt 80 years later by Julius Caesar and Augustus prospered. By the first century A.D. Roman Carthage was the capital of proconsular Africa and second only to Rome itself in the western Mediterranean. Romans repaired the ports, built new warehouses along the quaysides (some of them reaching back away from the commercial port on top of the buried Tophet), and set up temples and a proconsular palace on the Byrsa. The city became a center for education and a stronghold of early Christianity; St. Augustine taught rhetoric there before he went to Rome.

Although the Romans walled it about A.D. 425, Car-



This and the scene below are reconstructions by Richard Bryant, an architect with the British team, of the circular naval harbor. Pre-Roman Punic shipsheds are on island and lining outer rim of basin.

The Romans rebuilt the harbor, making it deeper and probably narrower, and surrounded it with wide stone quays. With frequent repairs, they used it from the first to the late sixth centuries A.D.

Musée du Bardo, Tunis

This famous stela shows a priest cradling an infant, apparently in preparation for sacrifice.

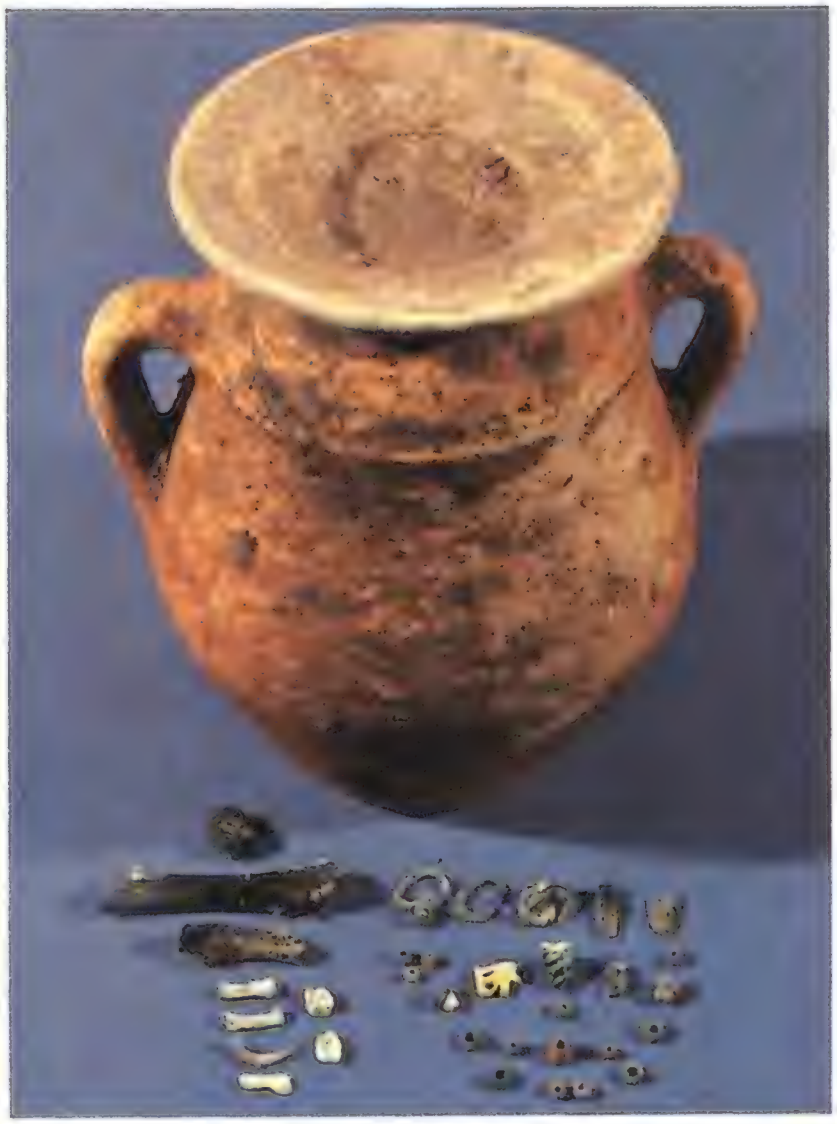
thage still fell to Genseric the Vandal in 439. A century later Belisarius took it back in the name of the Eastern (Byzantine) Roman Empire, but in A.D. 698 it fell again—to Moslem Arabs.

Nobody knows very much about how Punic Carthage looked. Excavation of small houses on the Byrsa reveals small rooms neatly plastered, set on narrow, well-drained streets. Each house or group of houses had a cistern, there being few natural springs in the area; some houses, at least, had elaborate inside plumbing with plastered baths, hot and cold piped water, and efficient drains. Judging from ancient representations of Phoenician houses, they seem to have been jammed closely together, usually of more than one story, and turned inward toward open courts with blank walls on the street.

The Roman writer Appian in the second century A.D., who based much of his reporting on the eyewitness accounts of Polybius (c. 208-125 B.C.), said that there were six-story houses in the Punic streets between the Forum and the Byrsa hill. This will likely never be proved or disproved, as only low walls remain, and even they are buried under three to four meters of rubble and later Roman building.

Appian was more specific about the seaports from which the Carthaginian ships sailed at the time of the final Roman siege: "The harbors had communication with each other, and a common entrance from the sea, 70 feet wide, which could be closed with iron chains. The first port was for merchant vessels, and here were collected all kinds of ships' tackle. Within the second port was an island, and great quays were set at intervals round both the harbor and the island. These embankments were full of shipyards which had capacity for 220 vessels. . . . On the island was built the admiral's house, from which the trumpeter gave signals, the herald delivered orders, and the admiral himself overlooked everything."

By the time historians, topographers and archaeologists first arrived on the scene about 170 years ago, there was nothing even remotely answering this description, except a pair of shallow, muddy lagoons near the sea. Nevertheless, some of the early scholars identified the lagoons as Appian's ports. But for every pro-port scholar there was a dissenter: as late as 1973 the French archaeologist Pierre Cintas published an essay on *Le Port de Carthage* which he subtitled "*fin d'une fiction,*" regretting to point out some "mistaken facts" which had led others to believe these could have been the ports. In the very next year Britain's Hurst began digging on the island, which by this time had become a peninsula, and in 1975 the Oriental Institute's Stager began excavating just west of the adjoining knee-deep lagoon. Both, in their first sea-



Intact burial urn from the Tophet and its pathetic contents: burned bones and teeth, amulets, trinkets.

This dramatic scene was not part of the original Tophet, but a later Roman vault built above it.

The heart-rending spectacle consists of urns and stelae dug up and rearranged by Tunisians.

Remains of the great aqueduct built by the Emperor Hadrian (A.D. 117-138) to bring water more than 80 kilometers from Mt. Zaghouan in the background to Roman Carthage. Frequently restored, it still

sons, found strong evidence that these were indeed the harbors.

Hurst's team quickly found traces of a large central structure with a roughly oval shape. All its walls had been destroyed and the blocks robbed, but there were traces of support trenches cut into bedrock. Radiating out from this main structure at regular intervals were carefully set lines of blocks. At the center of the island was evidence, from cistern levels, that the middle had once been built up so that the lower floor of the central building would have been about three-and-a-half meters above present sea level.

When Stager began his work there were few surface hints that he might be near Appian's commercial port. Yet the first trench, sunk through the scuffed grass where local schoolboys played soccer, turned up in less than a half-meter a flagstone Roman quay over which stevedores once dragged cargoes. Below the Roman quay they found sediments and quayside fills of the Punic period.

Cautious jubilation set in, but then both teams found something totally unexpected: traces of a wider water channel, 15 to 20 meters across, which ran north-south across the present island and has been traced as far south as the west side of the rectangular harbor. From its location and sedimentary evidence it clearly

Musée de Carthage

Fragment of a mosaic floor was found in 1975 by University of Michigan expedition. From a Roman house of the first century A.D., it depicts Greek charioteers wearing their various team colors.

carries water from the source to present-day Tunis, though now through a pipeline which frequently runs prosaically underground. A massive thing, the aqueduct still rises to 18 meters in some places.

once opened into the sea, but it has not yet been excavated that far. This channel clearly predates construction of the two ports themselves and is the earliest possible harbor work in the area.

If this was the first harbor work, and if it dates from the first half of the fourth century, then where was the original harbor of Carthage and what was the point of construction of this wide shallow channel? To the first question archaeologists have no answer yet. To the second, they have a suggestion: urban expansion.

It had long been surmised that the original settlement was somewhere near the Tophet, the most sacred religious area of the city, partly because a little hook of land here could have offered anchorage. But what if the original site wasn't there at all, but somewhere slightly north, under the shadow of the Byrsa hill?

One quite specific reference to an "old city" and a "new city" exists in a "world history" written circa 60-30 B.C. by Diodorus Siculus. He was describing the skirmishing in the streets of Carthage during the attempted coup of a man named Bomilcar in 308 B.C. and he mentioned Bomilcar's reviewing the soldiers "in the place called the New City, a short distance from Old Carthage. . . ." He further talks about the "main public square in Old Carthage" and the "tall buildings which surrounded the square."

Musée du Bardo, Tunis

Fanciful Roman mosaic, found at the inland city of Dougga, shows ships similar to Punic ones. The Romans are reputed to have learned shipbuilding techniques by copying the Carthaginian vessels.

There remains, in this new light, the stumbling block of the Tophet itself, for it was from this region that some of the earliest dated material for Carthage had come. A pioneering French-American excavation headed by the University of Michigan's Francis W. Kelsey had in 1925 turned up a protocorinthian drinking vessel in the Tophet which largely influenced the dating of the lowest burial level to eighth-seventh centuries B.C. The dating was accepted by most scholars at the time; then, in 1946-47, the French archaeologist Pierre Cintas found in the Tophet area what has become known as the "Cintas chapel." In the foundation deposit, diggers found a Late Geometric amphora with twisted handles, some pottery pitchers, and a painted askos in the form of a duck, all of which look like Punic imitations of Greek Late Geometric. Cintas first dated his "chapel," on this evidence, to about 1200 B.C. and a theory grew that the structure might have been used for worship by early Phoenician sailors who reached the site before the colony was founded. Cintas later reduced his estimate to 1000 B.C., and other scholars to the late eighth century B.C.

In the 1976 season, the American team found that the highest density of urns with remains of children sacrificed to the god Ba'al Hammon and his consort Tanit occurred after 400 B.C. Possibly as early as the late eighth or ninth centuries B.C., child sacrifice was practiced at Carthage. However, much to his (and everyone else's) surprise Stager found that the earliest burial urns had a higher percentage of animal remains than later (c. 400 B.C.), when nearly every urn contained the charred remains of children. As Carthage expanded, were more children than animals involved in the sacrifice (which could have served as substitutes for children in times of less pressing danger)?

In Augustan times, the first years of Roman Carthage, the Punic wall was razed, the quaysides were leveled up and new warehouses and storage structures were built on vaulted foundations (p. 49) that extend west over the earlier Punic Tophet.

A historic basin for Sunday boaters?

Sedimentary and other remains in the circular harbor tally precisely with those in the commercial harbor, though the jumble of masonry evidence on the island is exceedingly complex. Still, Appian's account of the ship sheds has been triumphantly confirmed. Hurst's group found in their very first season some radiating lines of stones and a sloping earth slipway which hinted at ship sheds.

Remains of 30 sheds have been found there, and if projected around the larger perimeter of the land side of the harbor, the total rises to at least 180—very close to that long-questioned statement that the military port in Carthaginian times could handle 220 ships.

The tumbled, pitted island and the skinny little muddy lagoon of today make such grandiose structures seem incredible. The British team believes that the circular harbor was deliberately shrunken in Byzantine times so that 15 meters of the shining "water surface," the pride of Punic Carthage, were lost.

Yet once the secrets are unlocked and the archaeologists pack up their equipment and write their reports, there is no reason—except financial—why the harbor could not be dredged again, the island cut away from the mainland as in Punic times and the circle turned into a glittering basin for Sunday small boaters. Punic Carthage is not, and never will be, an Athens or a Baalbek, a Rome or a Leptis Magna. There simply isn't enough left. But it could become, if more international and local aid can be solicited and Tunisians themselves persevere in a more determined way to recapture their past, one of the most evocative and physically beautiful ancient sites on Earth.

The West German team, excavating an area of Punic villas, has been using a balloon-suspended camera (above), with which the expedition's photographer, Bill Graham, recorded the remarkable view opposite, showing cisterns, walls and pavements.

By Michael Parfit

Fishermen at sea in Puget Sound war of the salmon

By day in courts and at night on the water, Indians and non-Indian gill-netters compete over rights to a dwindling resource

Against the salmon and against the law, Bill Dolman sets his net at twilight in the inlet called the Hood Canal on the edge of Seabeck Bay, 25 miles west of Seattle. The floats clatter out over the stern and the net fills with the water's movement like a sail made of gauze. And when the 300 fathoms of net are out and the jacklight that marks its far end is a glimmer in the distance, Dolman returns to the warmth of his cabin and waits, while the boat drifts with the tide, to see which will find him first—the fish or the federal patrol.

Dolman knows that somewhere above, a slender, powerful aircraft is racing at 170 knots while an observer in its red-lit interior counts boats on the water; that somewhere to the north a 41-foot Coast Guard boat is hastening toward him, heaving phosphorescent water ahead of it like a flag, and that at the Bangor naval base, three men wearing .38-caliber revolvers nestled in shoulder holsters are slipping quietly away from the dock in the 25-foot cabin cruiser called the *William Peck,* but sometimes known as "fish cop."

He knows that a U.S. District Court has ruled that these waters and the fish in them are reserved tonight for a tribe of Indians called the Skokomish. He certainly knows he is no Indian. And he knows that the patrols will find him if they can. But the fishing lights still blaze from the mast of his boat, the *Kiwi II,* red over white, in defiance.

Bill Dolman, who has already been cited eight times for contempt of court, is part of a resistance movement that is so determined it has been compared to civil rights upheavals. "Except for some desegregation cases," the Ninth Circuit Court of Appeals has said of this controversy, "the district court has faced the most concerted efforts to frustrate a decree of a Federal court witnessed in this century."

But the resistance to court orders going on here today, for all its intensity, is only one more unfortunate development in a long history of conflict and injustice that has followed the fish and fishermen of the Pacific Northwest—both Indians and non-Indians—for generations.

While the net sifts salmon from the water, Dolman plays chess with me in the cabin. He is a lean man, 30 years old; his face is angular and sharp, like the blade of a hatchet. By nature, inclination and passion he is a fisherman. "If Bill doesn't get his feet wet for two days," his wife likes to say, "he goes into withdrawal. He's got gills for lungs." In between moves he listens to other fishermen on the radio:

"Pick me up, Joe, pick me up?"

"Yeah."

"Heard anything about that fish cop?"

"Yeah. Just went by me up by Seabeck."

Dolman moves a knight and grins. I have been nervous all evening, because I can be arrested for just being on his boat, reporter or not. So he's winning.

"Seems like the heat's all over the place tonight," he says mildly. "Check."

The conflict that has brought Dolman to the Hood Canal tonight will be reviewed by the Supreme Court this term. But it began back in 1854 with treaties between Indians and the federal government. In those days, returning salmon packed the rivers and streams

With Mount Rainier looming in the distance, Indian fishermen lay out their salmon nets at sunset.

Color photographs by Charles Rotkin

Their mouths agape, a pair of salmon spawn at University of Washington's research station.

of the Puget Sound area shore to shore during their seasonal runs. To the Indians, salmon was both economic base and sacred food: in Skokomish lore, for instance, the chum salmon was the first food given the human race upon its creation. Understandably, when the white men came, the first thing the tribes wanted to preserve was their relationship to the salmon.

So, in 1854 and 1855, when the first governor of the Washington Territory, Isaac Stevens, negotiated with the tribes for rights to their land, the treaties that emerged placed the Indians on reservations but confirmed: "The right of taking fish at usual and accustomed grounds and stations is further secured to said Indians in common with all citizens. . . ."

The phrase "in common with all citizens" was a time bomb destined to explode 100 years later.

On the *Kiwi II* it is 6:45 P.M. Bill Dolman is picking his net, which now lies heavy in the water like a vine ripe with fish. It has been a good set: from every few feet of net hangs a dying chum salmon, gills fatally tangled in the strands. Each salmon weighs 10 to 15 pounds; already the boat is listing. Dolman works in silence. But the radio squawks of action.

"Attention all boats. Attention all boats. Fishery patrol cruising south, Misery Point. . . ."

"Here fish cop, cop, cop, cop. Here fish cop. . . ."

"Hey, Joe, they got me!"

"Heat's down here right off Seabeck, boys."

Dolman keeps reeling in the fish. He glances up toward the lights on the water to our north. There is movement out there, a change in the constellation of jacklights and fishing boats. Soon we can tell what it is: a pair of bright white lights is coming toward us.

Dolman's mood changes subtly. He keeps picking the net cheerfully, but now he watches. "The only way to get this to a higher court is to get arrested," he has told me. So he's ready to play the part. But I am uncomfortably aware of irony: on the Sound this kind of martyrdom is becoming a tradition, and so far all it has won is more war.

On November 11, 1954, 100 years after his great-grandfather joined the signers of a treaty with Governor Stevens, Bob Satiacum, a 25-year-old Puyallup Indian, was arrested for gillnetting steelhead trout on the Puyallup River. His was one of the first modern challenges to a system that had effectively denied the Indian tribes of the Puget Sound area access to the fish which had been so central to their culture.

What had happened was simple. As the white settlement of western Washington grew, fishing became a major industry. And as the market for fresh and

Free-lancer Michael Parfit, a frequent contributor to magazines, is now writing a book about the social impact of coal mining in the Western states.

packed salmon increased, the fishing fleet expanded with it and began a kind of march to the sea, advancing farther and farther from the rivers as fishermen competed to get to the inbound salmon first. This, combined with damage done to salmon-spawning streams by dams and development, drastically lowered the numbers of fish that made it back to the rivers. By 1907, according to fishing-rights authority Alvin Ziontz, the state of Washington had closed most of its rivers to commercial net fishing. But the Indians, who had used fish for trade as well as subsistence for centuries, were mostly river fishermen. They could not compete with the expensive equipment operated on the Sound by non-Indian fishermen; their fishery was essentially closed. So Indians became loggers, cannery workers, welfare dependents—and saltwater or illegal freshwater fishermen—for two generations, until Satiacum began 20 years of high-profile demands for restoration of rights.

Satiacum's 1954 case was dismissed, and became a small Indian victory. It helped turn a key in the door that prevented the Indians from fishing. But the door was barred by other devices. The state of Washington argued, in one case, that the treaties were not binding because the Indians "were and are a conquered people without right or title to anything. . . ."

So in the early Sixties the western Washington Indians began a concerted struggle to demand that their treaties be recognized. All sides in that conflict remember it as a war.

Vigilantes, Brando and stiff steelhead

At night on the Puyallup and Nisqually Rivers, Indians stretched their gill nets and the state of Washington's agents staked them out. In the dark of early morning when Indians retrieved the fish, officers were waiting to arrest them. Sometimes vigilante groups made up of sport fishermen, who believed their salmon and steelhead runs were being ruined, attacked fishing Indians, destroying nets and throwing outboard motors into the water. Sometimes Indians would retaliate against arresting officers with verbal and occasionally physical abuse. In 1964 the Indian cause received national publicity when Marlon Brando staged a fish-in with Satiacum on the Puyallup (p. 64). "We went out in the daytime when you can't catch anything," said Satiacum, a burly, powerful man, now 49, one rainy afternoon in his home near Tacoma. "We took three steelhead with us and put them in the net as we put it out, and when we pulled on the cork line, lo and behold we had fish."

State officials, recognizing the stiff steelhead, declined to prosecute.

Satiacum was arrested, he remembered, more than 20 times. Once he took his 26-foot cedar dugout canoe into a courthouse. Once he tied a different canoe to the battleship *Missouri,* anchored in Bremerton harbor, and claimed the huge vessel as Indian property. Once he spent 90 days in the Pierce County Jail in Tacoma. He participated in fish-ins on the Puyallup and on the Nisqually near a place called Frank's Landing, which became a center of conflict where non-Indian activists gathered to assist the cause.

"It was . . . it was tough times." Satiacum is a millionaire now, grown rich on the profits of reservation liquor and tobacco sales and gambling operations. He owns a $200,000 covered swimming pool, and he wears a gold arrowhead at his throat. But he talked softly of the days of conflict, as if their intensity was good to

William Dolman, here aboard his boat, the *Kiwi II,* was sentenced to 60 days in jail for illegal fishing.

Senior U.S. District Judge George Boldt ruled in favor of Indian fishing rights, sentenced Dolman to jail.

remember. "It wasn't the demonstrations that were tough. It was the actual combat with the fish-and-game people. I learned how to become a real good ghost. They had daytime eyes; they used flashlights. I would stand still for a while and then disappear into the fog."

In 1974, 120 years after the first treaties were signed, Senior District Judge George H. Boldt made a historic decision. Ruling on a case brought by the federal government against the state of Washington, Boldt, after studying documents and hearing an enormous amount of testimony, interpreted the phrase "in common with" in the Stevens treaties to mean the Indian tribes that signed those treaties had, in effect, a right to catch 50 percent of the harvestable salmon heading for their tribal fishing grounds.

The ruling stunned the state. Suddenly the fewer than 1,500 Indian treaty fishermen of Washington, who belong to more than 20 tribes and who had been catching less than 10 percent of the 7.5 million fish caught each year, were granted a protected chance to harvest a resource previously claimed by the state's 6,000 non-Indian commercial fishermen. The Indians, Boldt said, actually had a stronger interest in the fish than anyone else: they had a *right* to the fish; everyone else just had a privilege. Although the Supreme Court will review parts of the Boldt decision, its impact was felt immediately. It meant that the huge non-Indian fishing fleet was suddenly threatened with economic disaster. So the second round of the fish wars of Puget Sound began.

On the Hood Canal it is 7:10 P.M. The two white lights still move toward the *Kiwi II*. The radio has gone oddly silent. The starboard deck is awash in salmon. Together, Dolman and I watch the lights approach; now we can hear the sound of engines.

Dolman has been involved in resistance to the Boldt decision since the beginning. Although there have been many incidents of vandalism to Indian boats and nets, Dolman's single-minded determination is just to keep "Indian-fishing"—his euphemism for fishing in waters open only to Indians. In Washington, fishing is regulated by the number of hours fishermen are allowed on the water; the Boldt decision meant much shorter hours for non-Indians and longer ones for Indians. This week, for instance, the area Dolman is fishing now is open to Skokomish fishermen all week and to all citizens from 4 P.M. Wednesday to 8 P.M. Thursday. This is Monday night, so he's Indian-fishing.

Dolman refuses to get around the Boldt ruling by renting an Indian. It's a seller's market on the Sound for treaty Indians who want to make money off fishing and who don't mind bending tribal regulations. It is easy to find a non-Indian fisherman willing to pay for red-brown skin, tribal identification and the red-and-white plastic number that is the passport to Indian-only waters. The going rate for an Indian is 50 percent of the catch, and if he negotiates hard enough, he probably won't even have to work. In contrast, a paid crewman normally makes only 15 percent.

So, in the years after the Boldt decision, Dolman Indian-fished and was cited—a total of eight times. He appealed, and kept fishing while federal fishery agents grew more and more frustrated with the pace of the court system which, up to the time I stand here on Dolman's boat, has yet to put a fisherman in jail. Dolman himself became the ultimate symbol of the courts' slow pace with his eight citations; the agents came to know him well. For example, he was even present, although not a participant, on the notable day at Anacortes when two overwrought men ineptly tried to blast the 82-foot cutter *Point Richmond* into eternity with a small brass cannon. One of the men braced the cannon against his stomach while the other one tried to light the fuse. Wind blew the match out. When the Coast Guard later tested the weapon the charge blew the cannon back 12 feet. "If it had gone off," an investigator told me wryly, "we would have had only one man to prosecute."

Little violence—up to now

So far, the conflict has been relatively peaceful. When I asked a fishery agent if he'd encountered any violence recently, he said, "Naw. One guy threw a hake at me the other day, but I don't think he meant it."

"But it's getting to the point where guys have got to fish or belly up," Dolman says somberly. "If this isn't straightened out, it's going to be a real violent thing next season." The lights are almost upon us now, a white glare just off to port. I wait for the stab of the searchlight. But nothing comes.

Then there is a shape back of the lights, and finally the boat comes into view, in the stern the telltale silhouette of the gill-netter's reel. The other fisherman slips past, bound for Seabeck Bay. The wind is behind him, and the smoke from his stack floats with him out of the reflection of the *Kiwi II*'s work lights and back into the darkness.

Ten hours later we are churning north up the canal in the first light of morning. As we head north to sell Dolman's fish at Port Townsend for a total of $1,600, the *William Peck,* the fish cop, roars up from the south, from its night of prowling. A figure, standing in the stern, waves and Dolman waves cheerfully back.

On the following Friday morning, while Dolman's wife and two children wait outside in the courtroom hall, Judge Boldt adds another episode to the long, strange history of fish and fishermen by revoking Dolman's bail on his appeal. The reason for the action, Boldt says, is that because Dolman keeps fishing with the Indians, he is "a danger to the community." So Dolman becomes the first non-Indian fisherman jailed, taking up residency in the Pierce County Jail in Tacoma, where Bob Satiacum once spent 90 days.

There is no escaping the racial overtones this controversy carries with it like a hold full of corrosive freight. To the non-Indian fishermen it is a clear example of reverse racial discrimination. It is unconstitutional, they protest, that a person should have exclusive access to a resource simply because, say, he is one-fourth Skokomish. But at least one participant thinks the race issue is a misconception. "This decision has nothing to do with race," said Dr. Richard R. Whitney, a biologist who, as court-appointed chairman of the fisheries advisory board, oversees all salmon regulation under Boldt's jurisdiction. "You can't just be an Indian to fish. For instance, if you're a Navajo or Chehalis Indian you can't fish. The fishing right resides in the tribe. You have to be a member of one of those tribes that signed that contract."

But some of the Indians themselves are proud that it *is* a matter of race—or, if not of race exactly, at least of heritage. "It's true we're all citizens," said Bob Miller, a Skokomish Indian. "They say we're all the same, but we're not. We have a different way of thinking." Miller, 30, had taken me out on the Hood Canal in a 21-foot gill-net boat, and we had just finished helping a friend of his pick a net. Miller had also been part of the years of Indian unrest. Now he works at street

At night a Coast Guard skipper (left) boards boat of non-Indian fisherman (center) to search for salmon.

maintenance for a nearby town and fishes part-time. Fishing, he said, is not just a matter of money to him, it's part of his life. "Fishing was how it was," he said. "My dad was a fisherman; we just done it."

He tossed out a small hake, dragged up by the net, into the canal. Two gulls swooped down to it. One was white and one brown. Each bird grabbed one end of the eight-inch fish and pulled, each somehow managing to croak accusingly at the other through its clenched beak. Neither Miller nor I said anything about the gulls when finally the white bird snatched the fish away and swallowed it before the brown one could regain a hold. Like the birds, which both sat in the water looking in opposite directions, we never even acknowledged the little struggle; the symbolism was too grotesque. Miller just said, some time later: "Deep in our minds we know that the commercial fishermen are just too strong; that some way they're going to overturn the Boldt decision."

In the last two years Indians have approached and may have actually reached their 50-percent quota on some runs—at least of legally caught salmon—although the figures are so garbled by controversy that nothing is clear. But already some effort is being made to soften the decision's impact on non-Indians.

All sides seem to agree that the current turmoil, with its heavy illegal fishing, threatens the very survival of the salmon runs. "If we don't do something soon," said John Hough, director of the Interior Department's western field offices, "we aren't going to have a resource in the future. No doubt about that." The problem is that no one agrees how to solve it. The tribes argue for stronger enforcement of the decision as it stands. A few non-Indians, representative of a general national backlash against Indian claims, call for Congress to try to nullify the treaties completely or at least force their renegotiation. Others press for a specific fishing settlement that gives the non-Indian fishermen some compensation for the loss. Hough himself is a member of a federal task force that has suggested, in part, that the fishery be enhanced, and that the federal government buy boats and licenses from non-Indians and help Indians get better equipment so that the two sides could fish side by side and still share the fish. Most parties also agree that the proposal doesn't solve other key questions that are still being debated: does the Indian right to salmon include fish raised in state hatcheries, and do the treaties give the tribes the right to protect the salmon habitat?

The proposal was not greeted warmly. "It's the only thing I have ever been involved with that was met with unanimity," Hough said. "It was all negative." Commercial and recreational fishermen wanted the Indian percentage cut to about 30 percent, and Indians said the proposal was an attempt "to somehow disassemble the [1974] decision." The staff of the U.S. Commission on Civil Rights commented that "it seems odd to require a party whose *rights* have been infringed to pay a price in order to induce a party that has abused its *rights* and *privileges* to conform to the law."

It is 3:30 on a Monday afternoon. I stand on the banks of the Nisqually River at Frank's Landing; the

At Hoodsport, Indian loads salmon for transport to processing plant recently purchased by Skokomish.

U.S. NAMES RABBIT DIESEL #1 IN ECONOMY.

We always knew we made terrific economy cars.

Now it's official.

Because according to the 1979 EPA fuel economy estimates, our Rabbit Diesels get the highest mileage in America: an incredible 50 MPG on the highway, and 40 MPG in the city, with standard transmission.

(Of course, your mileage may vary depending on how and where you drive, optional equipment and your car's condition. That's also official.)

We could go on and on about all the innovations we've built into our newest Rabbit.

Like the fact that it goes on and on (amazingly!) without ever needing a conventional tune-up. (There are simply no spark plugs, points, condensers, or carburetors to tune.)

Our wizardry doesn't stop with the engine either.

There's front-wheel drive for better tracking.

There's more room for people than 31 other cars you could buy.

And a Rabbit Diesel goes like a bat out of you-know-where. In fact, it set 31 world's records for diesels on a track in Miramas, France.

Come test it for yourself.

For years we've built cars that use very little gas.

Now we've built one that doesn't use any at all.

VOLKSWAGEN DOES IT AGAIN

©VOLKSWAGEN OF AMERICA, INC.

signs of the Indian turmoil of the Sixties have literally been washed away. The river has eaten the land where the Indians once camped and launched boats. Bill Frank, one of Satiacum's partners in that earlier unrest, stands beside me and looks out across at the space where the Indian shacks used to be. There may be salmon moving, but the murky water hides them.

Bill Frank has a dark, pockmarked face. He wears a long braid down his back, and his eyes look as if they have seen enough trouble. He, too, has spent time in jail for fishing. He was in the courtroom when Dolman was sent to jail. Now he contemplates that action. "I was in that position, too," he says. "I was in jail. That little wife there, those kids. Ten years ago those were my wife, my kids." He shakes his head wryly. "That poor guy in jail. I don't want that guy locked up. I don't want to take a home away from a man. That kid is a scapegoat for the industry."

We both watch the water. The wind is cold. I think of the century of injustice. "I know commercial fishermen who are getting hurt," Bob Miller told me. "But if you look at it the other way, we got hurt a lot of years." "It's a moral question," said another Skokomish, Gary Peterson. "Should a nation keep its word?"

And yet I wonder: has the injustice done to the Indians only now been reflected in damage done in return to the non-Indian fishermen? Instead of an organized, scheduled phasing-in of a vast change in their lives, the law was just suddenly inverted. The total harvest of commercial fishermen of the Sound would, within a few years, be halved, without compensation. To them it was a bit as if the federal government had gone out into the farmlands of Kansas and suddenly reapportioned the rain.

"The Boldt decision is not the problem," John Hough told me. "It is a symptom. The problem is that the federal government failed to enforce valid treaties. You can't charge the fishermen with the total loss when the government is at least as liable."

That, however, is the situation today. Indians have technically received justice, but there is still something wrong. And it is likely that the turmoil will go on.

"The government—the people, they don't understand that people can get together to save a resource," Bill Frank says sadly. "They understand violence. I been in jail so many times. They understand violence, and it's too bad. Things break down in this country."

And I remember talking to Dolman through a muffling steel grate in the jail on his eighth day. He was cheerful; he said he would be very good at chess when he got out. There were a lot of burglars and a few bank robbers and murderers in there with him, he said. When they asked him what he was in for, he answered, "Fishing."

We talked about the mass arraignments of fishermen that had filled the courtroom two weeks before, and all the boats still out on the water, with five men being cited every night. He grinned at me through the tiny bulletproof window.

"I told them they better look out," he shouted through the grate. "Pretty soon 90 percent of the population in here is going to be fishermen."

In 1964, Marlon Brando and Indian activist Robert Satiacum staged a fish-in (above). They were arrested but were not prosecuted. At right, Satiacum, now a successful entrepreneur, relaxes in his $200,000 pool.

To Commemorate Its 75th Anniversary, *The Deutsches Museum* presents

The Inventions that Shaped the Modern World

An official collection of ten superbly crafted pewter sculptures...
honoring the genius of mankind

From left: Johannes Gutenberg ca. 1395-1468. James Watt 1736-1819. Thomas Alva Edison 1847-1931.

Sculptures shown approximately actual size.

A single, limited edition.

Available solely by subscription application.

Limit: One collection per subscriber.

Subscription deadline: February 28, 1979.

This year marks the 75th Anniversary of The Deutsches Museum—the largest museum of science and technology in the world. To observe the occasion in an appropriately unique and memorable way, the Directors of the Museum have authorized the creation of an unprecedented commemorative issue—honoring:

"THE INVENTIONS THAT SHAPED THE MODERN WORLD"

This official commemoration will comprise ten superbly crafted pewter sculptures—each re-creating an historic "moment of invention." In all, they will pay homage to ten of the most important landmarks in the history of modern science—depicting the inventions themselves and the men of genius credited with their creation. They include:

THE PRINTING PRESS
Johannes Gutenberg

THE TELESCOPE
Galileo Galilei

THE STEAM ENGINE
James Watt

THE CAMERA
Louis Daguerre

THE X-RAY
Wilhelm Roentgen

THE PHONOGRAPH
Thomas Alva Edison

THE WIRELESS TELEGRAPH
Guglielmo Marconi

THE TELEPHONE
Alexander Graham Bell

THE AUTOMOBILE
Gottlieb Daimler

THE AIRPLANE
The Wright Brothers

Each of the sculptures crafted for the collection will be a wholly *original work of art*—created exclusively for this 75th Anniversary celebration. Moreover, the collection will reflect the most scrupulous standards of *scholarship*, for each sculpture will be fully authenticated for scientific accuracy by the Museum. Indeed, the beauty and detail that distinguish each of the ten sculptures—the costumes . . . the facial expressions . . . and especially the detail lavished upon the actual inventions themselves—pay tribute to the highest criteria of science and art.

So vividly detailed, in fact, are these ten extraordinary sculptures that you will actually be able to see the first crude type form developed by Gutenberg for his printing press . . . the innovative separate condenser that proved so vital to the success of James Watt's steam engine . . . virtually every pipe and bolt of the historic internal combustion engine that was destined to establish Gottlieb Daimler as the father of the automobile. . . .

The world's foremost creator of commemorative issues

To ensure the creation of a commemorative issue that will retain its power and significance for generations to come, The Deutsches Museum has enlisted the skills and talents of an organization whose name has become synonymous with many of today's most prestigious commemoratives: The Franklin Mint. Hence "The Inventions that Shaped the Modern World" will be the direct creation of the very artists who are universally recognized as the contemporary world's foremost inheritors of the great Renaissance tradition of medallic sculpture.

And when the sculptors of The Franklin Mint have completed their commission, each of these exquisitely crafted pewter sculptures will be individually hand-finished—to bring out every feature and detail . . . the subtlest nuances of the artist's work . . . as well as the rich, gleaming luster of the sculptured metal itself.

The assurance of lasting rarity

Furthermore, "The Inventions that Shaped the Modern World" will be created in only one, extremely limited edition—to be issued solely in honor of the 75th Anniversary of The Deutsches Museum, and made available only by subscription application.

In addition, there will be a further limit of just one collection per subscriber. Consequently, the entire edition will exactly equal the precise number of valid applications entered before the subscription rolls close.

To certify the official nature of the collection, the base of each sculpture will bear the emblem of The Deutsches Museum and identify the creator of the invention depicted. Moreover, a Certificate of Authenticity bearing the signature of The Director-General of the Museum—attesting to the limits of the edition—will accompany the sculptures. Subscribers will also receive authoritative background literature on the evolution of each invention and its enduring impact upon mankind.

"The Inventions that Shaped the Modern World" has been expressly conceived as a commemorative of truly *international* significance — fully reflective of the overwhelming universal importance of the subject it honors.

For collectors who recognize and appreciate the beauty of sculptured art . . . for parents who seek to imbue their children with a keener understanding of the world they inhabit, and a deeper awareness of man's potential for greatness . . . indeed, for everyone who is enthralled by the story of civilization itself . . . there can be few acquisitions more inspiring, more enlightening, more lastingly rewarding.

Subscription deadline: February 28, 1979

Following the absolute closing date of this single edition, "The Inventions that Shaped the Modern World" will never be offered again in the United States. Please note that you need send *no money now* to enter your subscription for the collection. However, your application can be accepted only if it is postmarked no later than the final subscription deadline of *February 28th.*

© 1979 FM

SUBSCRIPTION APPLICATION

The Inventions that Shaped the Modern World

Valid only if postmarked by February 28, 1979.

Limit: One collection per subscriber.

The Franklin Mint
Franklin Center, Pa. 19091

Please enter my subscription for "The Inventions that Shaped the Modern World"—an official collection of ten superbly crafted pewter sculptures to be issued by The Deutsches Museum on the occasion of its 75th Anniversary.

The sculptures will be issued at the rate of one every three months, and the issue price of $90.* each will be billed to me in three equal monthly installments of $30.* I need send no money now, and will be billed for the initial installment prior to shipment of my first sculpture.

**Plus my state sales tax*

Signature _____

Name _____
PLEASE PRINT CLEARLY

Address _____

City _____

State _____ Zip _____

ALL APPLICATIONS ARE SUBJECT TO ACCEPTANCE. 1

By Lincoln Barnett

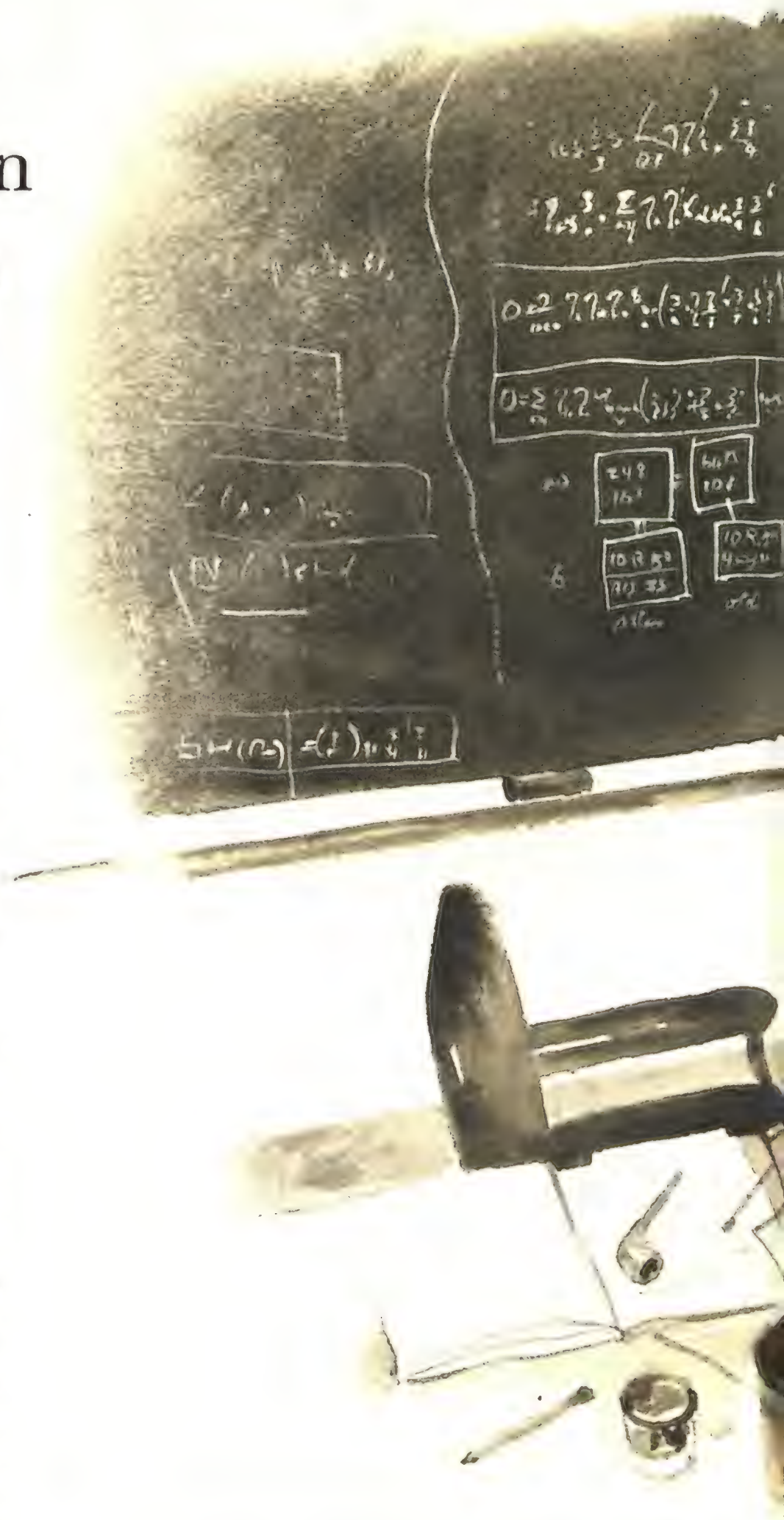
On his centennial, the spirit of Einstein abides in Princeton

Fleeing the brutalities of Nazi Germany, the physicist found sanctuary and inspiration within the Institute for Advanced Study

"As a man without roots anywhere . . . I myself have wandered continually hither and yon—a stranger everywhere." Albert Einstein addressed these words to his friend, physicist Max Born, in 1920. Einstein, then 41 years old, had indeed been a man without roots. He had wandered widely from Ulm, Germany, where he was born on March 14, 1879: to Munich, where he went to school; to Zurich, where he attended the famous Swiss Federal Institute of Technology; to Bern, where as a clerk in the patent office he wrote his first great paper on relativity in 1905; and to Berlin, where he became first director of the Kaiser Wilhelm Institute for Physics. He had taught for a year at Prague and lectured throughout Europe.

Then, in the autumn of 1933, observing with disbelief and horror the Nazis' insensate assault on intellect and realizing he could no longer live in Germany, Einstein accepted an appointment to the newly established Institute for Advanced Study in Princeton, New Jersey. Here at last he found something like a homeland, here he put down roots and remained for the rest of his life.

Beginning in March 1979, the Institute will mark the 100th anniversary of Einstein's birth with a yearlong commemoration. The Smithsonian's "Einstein: A Centenary Exhibition" will open March 3 at the Museum of History and Technology. Other observances are planned in Zurich, Calcutta, Germany, Israel and many other places, for Einstein belonged to the whole world.



A scribble of equations on blackboard, a clutter of papers on a desk—this drawing by artist

Arthur Shilstone shows the office at the Princeton Institute as it was when Einstein worked there.

Herblock © 1955 *The Washington Post*,
from *Herblock's Here and Now* (Simon & Schuster, 1955)

When Einstein died in 1955, the cartoonist Herblock marked his passing with this memorable drawing.

His decision to settle in Princeton came only after several years of growing incredulity that the German people could surrender power to such a man as Hitler. In 1922 Einstein received the Nobel prize for physics, but despite the honors cascading upon him from all corners of the world, he found himself still regarded with ambivalence in his fatherland. Having been raised as a young man in an essentially secular home, he was perplexed to find that some people perceived him not as the individual, rational, sentient being he knew himself to be, but as "a Jew." But powerful forces were at work in Germany, raising a tide of anti-Semitism in which many reputable physicists were trapped and induced to join a chorus of denunciation of Einstein's achievement.

When Hitler became chancellor of Germany in January 1933, Einstein was in the United States spending a term as visiting professor at Caltech. Within weeks he announced his intention to live in America, resigned from the Kaiser Wilhelm Institute and his other posts, and renounced his German citizenship. His actions drove the Nazis into a frenzy of retaliation. They refused to accept his renunciation of citizenship and declared it would forthwith be revoked, an act that Einstein later compared with the public hanging

From the easy chair in his study, Einstein liked to look out over the zinnias and lilies in the garden.

In his later years Einstein spent long hours in his study. He wrote on

of Mussolini some days after he had been shot. They confiscated his bank account, the contents of his wife's safe-deposit box and his summer house, and hurled his books and papers into bonfires. In the universities, newly Nazified professors opened an assault on relativity and its author, depicting him as the arch villain of a Jewish plot to pollute science and thereby wipe out civilization.

Meanwhile, Einstein was bombarded with offers and entreaties from the greatest universities in the Free World. But he was most attracted to the town of Princeton, where Dr. Abraham Flexner had conceived the dream of an intellectual sanctuary, a community of dedicated scholars who would be able to contemplate in quiet and security, free from financial and teaching obligations (the Institute is independent of Princeton University).

When Flexner first raised the question of salary, he asked Einstein to name his own figure. Einstein suggested what he considered a reasonable sum: $3,000 a year. "Could I live on less?" he asked. Flexner was aghast. He knew that he could not possibly recruit important American scholars for such a minuscule wage, nor could he picture a faculty where other men received higher pay than the world's greatest scientist. "Let Mrs. Einstein and me arrange it," Flexner said, aware that Einstein's wife handled budgetary matters; in the end they settled on $16,000 as a more appropriate stipend.

On October 7, 1933, Einstein sailed from Southampton, accompanied by his second wife Elsa and his secretary Helen Dukas, who had come to work for him as a young girl in 1928 and was destined to serve him for the rest of his life. Upon their arrival in New York harbor, they evaded reporters and photographers by disembarking on a tugboat before their ship docked. (Einstein had been photographed, painted and sketched so many times in the heyday of his fame that he once replied to a stranger who asked his calling: "I am a model.")

During his first months in Princeton, Einstein clung to the notion that he was a "bird of passage"; he thought of the Institute as a home base from which he would periodically fare forth to attend symposiums and meet with colleagues in the European community of science. But as the shadow of Hitler spread more

Lincoln Barnett has explained the scientist's theories in The Universe and Dr. Einstein, *which has been translated into some 20 languages.*

a pad on his knee and continued his quest for a Unified Field Theory.

The house at 112 Mercer Street as it appeared during Einstein's years; it has changed little since.

darkly over the Continent, increasing numbers of eminent scientists fled their homelands. Many of them came to America and on their arrival they called on Einstein. It was not long, therefore, before he lost his sense of isolation and exile and came to cherish the quiet, tree-canopied streets of Princeton. In the spring of 1935, Einstein, Elsa, Helen Dukas and Elsa's daughter Margot (who had now joined them) applied for naturalization as citizens of the United States. That summer he bought the modest, white frame house at 112 Mercer Street (above) where he spent the remaining 20 years of his life. He never saw Europe again.

The house was perfectly situated for the little family, lying as it did about halfway between the sprawling university campus to the north and the green park-like grounds of the Institute a half mile to the south, where, after its completion in 1940, Einstein enjoyed a large, sunny office. In 1939 the household was augmented by the arrival of Einstein's younger sister Maja, of whom he was very fond and who bore a striking resemblance to him. Elsa died in 1936 and Maja in 1951. With their passing, Miss Dukas' role as secretary was enlarged by additional duties as housekeeper, cook and general factotum. Today the house at 112 Mercer Street has only two occupants: Margot Einstein, now 79, still lively, alert and articulate; and Miss Dukas, who has an office of her own at the Institute and works daily organizing Einstein's papers and his immense, eloquent correspondence.

Einstein was insistent that his house should not be preserved as a museum. Yet very little has been changed and the 140-year-old building lives on today as its last owner saw it. The decor of the front parlor is very German, dark and heavy, featuring ornate, inlaid cabinets, armoires, chests and high-backed chairs —all of them old and valuable.

The most cheerful room in the house is the upstairs study where Einstein spent most of his time at home. At one end a large window overlooks a pleasant strip of lawn shaded in summer by elms, maples and weeping hemlocks, dotted with flowering shrubs, a garden ablaze with zinnias and day lilies, and a small grape arbor. Einstein's large work table stands in the center of the room, but when engaged in his computations he preferred to sit in his favorite easy chair, writing on a pad on his knees. "All he needed," says Miss Dukas, "was a pencil and paper—and his head."

Through the years Einstein adhered to a simple routine. He usually arose between 8:30 and 9 A.M. and read the *New York Times* with his breakfast of two

As a young clerk in the Swiss patent office in Bern, Einstein developed his Special Theory of Relativity.

boiled eggs, toast and coffee. Afterward, in fair weather, he would walk to work; in winter or on rainy days he would take the Institute bus. Arriving at his office, surrounded by blackboards inscribed with tensor equations and other arcane mathematical calculations, he would devote himself, often with a mathematical assistant, to the problem that had haunted him to the exclusion of virtually all others for the latter half of his life: the resolution of a Unified Field Theory, bringing together in one mutually consistent series of equations the physical laws of the great forces that govern the universe—electromagnetism, gravitation and nuclear force, the tiny, terrible force inside the atom.

In this quest many associates came and went and some of them subsequently became famous in their own right. Dr. Banesh Hoffmann, professor emeritus of mathematics at Queens College of the City University of New York, had his first meeting with Einstein in 1936. Timidly, he knocked at the door of the great man's office and heard the famous resonant voice command, "Come!" He entered with trepidation and found Einstein in his usual casual attire, sitting in an armchair, smoking his pipe and writing on his crossed knees. Hoffmann said he had some ideas he would like to discuss. Einstein leaned back in his chair and said, "Will you please put your equations on the board?" and then added gently, "Please go slowly—I don't understand things quickly." At those words, Hoffmann recalls, "I lost all fear. As the interview went on he asked all sorts of questions. His remarks were never critical. He made it a joint project. We were on the same side."

Another former associate, Dr. Valentine Bargmann, professor emeritus of mathematical physics at Princeton, remembers that he once happened to interrupt an interview Einstein was having with a woman reporter who was asking questions that Bargmann considered trivial and impertinent. When the reporter left he expressed his indignation at the "outrageous" questions. Einstein, who had been beset by the press through all his years of fame and had always faced its members with patience and courtesy, responded gravely, "She has her rights. She has a job to do, and she has every right to ask me these questions."

Einstein usually worked with his assistants at the Institute until about 1 P.M. Then, in good weather, they would walk back to 112 Mercer Street. Directly across the street stands the home of Dr. Allen Shenstone, for many years chairman of the physics department at Princeton, and now professor emeritus. Dr. Shenstone recently described a scene he had often observed. "Einstein kept very regular hours, and if I looked out the window I could see him returning from the Institute at lunchtime. He would stroll up the street with an assistant and when they came to his house they would stand outside on the sidewalk talking. Very often they'd become so deeply involved in the discussion that Einstein would simply turn around and start walking back to the Institute. Except, of course, if Helen Dukas happened to see him she'd run outside and drag him in for lunch."

Lunch was the principal meal of the day, and its main course often featured spaghetti or macaroni, for Einstein had a special liking for Italian food, perhaps as a consequence of a happy year he had spent with his parents in Milan as a boy. After lunch he would ascend to his study, sometimes to nap, but often as not to continue his calculations. In the evening, after a light

supper, if there were no guests he would return to his study and work far into the night on his lonely quest.

In his earlier years in Princeton he often took his beloved violin to chamber music sessions at the homes of friends and neighbors. He played better than many an amateur and evoked pure and accurate tones with little vibrato before his fingers began to age. Einstein's great love musically was the 18th century—Bach, Vivaldi and, most particularly, Mozart. The romantic composers he found too "sugary." Beethoven he found "too abrupt."

"What nonsense did Mozart put down here!"

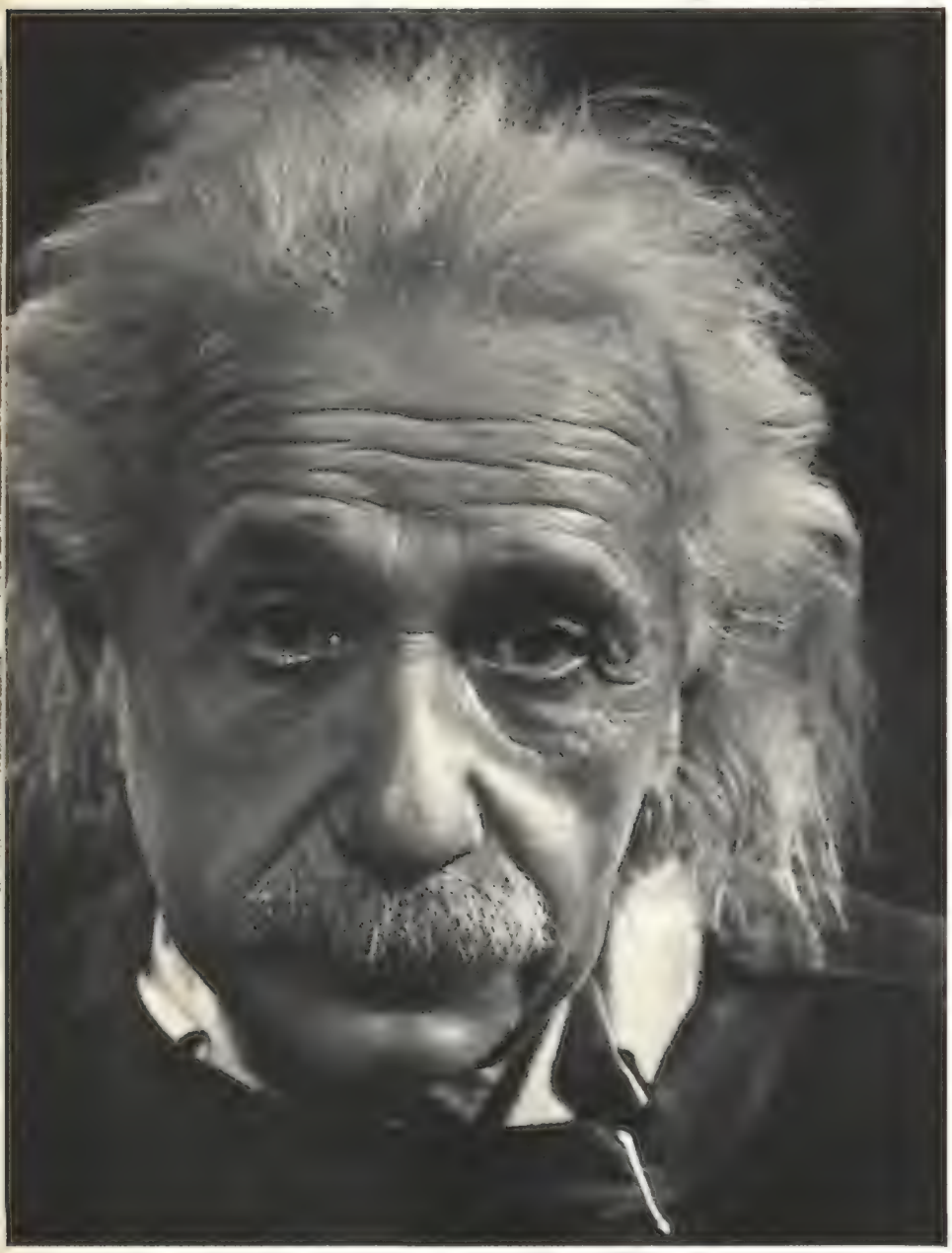
Einstein was well past sixty when he decided that chamber music had become too demanding on his time—and on his slowing digital reflexes. Margot Einstein recalls that when he first began to make occasional mistakes in following a score, he would joke about it, exclaiming in mock indignation, "What nonsense did Mozart put down here!" Although he finally gave up participating in chamber ensembles, he continued to play alone, and sometimes on a spontaneous impulse. Thus on one Christmas Eve when choristers appeared in front of his house, he reached at once for his violin, stepped out on the porch in the frosty air, and provided an accompaniment to their carols.

His swift, warm response was characteristic of Einstein's behavior in all his Princeton years. "Kindness," says Dr. Shenstone, "is the quality I'd think of first in trying to epitomize him." Through the decades, after he had become a world figure, a living legend, he gave unstintingly of his time and modest equity to countless supplicants, to talented students, scholars without jobs, writers who wanted forewords, and especially refugees who could not obtain visas without his pledge of support. Many anecdotes emerged from Princeton alleging that he helped local kids with their arithmetic: the stories were apocryphal, yet based perhaps on an actual incident. As Miss Dukas relates it, a little girl, the daughter of a neighbor, called one afternoon with a piece of fudge in her hand and asked to see Professor Einstein. She was shown upstairs to his study, where she proffered the fudge and asked, "Will you please help me with my homework?" Einstein accepted the fudge graciously but denied the child's request, explaining, "That would not be fair to your teacher."

Einstein's famous informality in manner and dress was no elderly affectation. As a youth he offended many of his stiff-necked teachers by his offhand, nonconforming behavior and refusal to click heels, brace and bow; in his middle years he outraged some of his starchy European colleagues by his careless, often sloppy attire—baggy trousers, old sweaters, open shirts, wool caps. Years before long hair became modish Einstein had decided that barbers were a waste of time. Occasionally he wore a hat, and Princeton neighbors noticed that if it happened to rain when he was walking between the Institute and home, Einstein would take off his hat and tuck it under his coat. Why? "If my hair gets wet, it dries. If my hat gets wet, it's spoiled." From time to time his wife would criticize his careless habits of dress, and he would turn away her comments with a joke. "It would be a sad thing," he liked to say, "if the bag was better than the meat wrapped in it."

As the years passed and Einstein continued to labor on series after series of equations in pursuit of his lifelong grail, the Unified Field Theory, his energies and inspiration flagged, but he continued to drive himself with relentless tenacity. Margot Einstein remembers moments of near despair. "Some days when he came home for lunch alone, and if no one else was there, we would not speak a single word. He looked so tired and pale. I knew he wanted only to be quiet. He would say, 'Would you like to take a walk?' and we'd walk together, and he loved to explain the little things of nature in a simple way, a beautiful way. And I can still hear his full, free laughter, like a child's."

In 1947 the scientist posed with stepdaughter, Margot (center), and his secretary, Helen Dukas.


© by Philippe Halsman

In 1947 portrait, Philippe Halsman captured what C. P. Snow called Einstein's "splendid physiognomy."

Why did Einstein drive himself so in those sunset years at Princeton? To him the importance, the imperative, of a Unified Field Theory lay in the fact that the two great theoretical systems of modern science by which Man attempts to understand the world beyond his senses rest on different concepts and speak in different mathematical idioms (Relativity sets forth the physical laws governing the macrocosm, the outer universe of stars and galaxies; and the Quantum Theory deals with the microcosm, the inner, invisible universe of atoms and their nuclear components). It was Einstein's ambition to bridge the gulf between these two theoretical structures, between the great and the small, and to produce a single edifice of cosmic law within which all the pageantry of nature could be discerned. To him the idea that there should be two windows to the universe, independent of each other, was "intolerable to the human spirit."

Meanwhile the mainstream of physics swept around and past him. The new generation of physicists pursued the path of quantum mechanics and looked with pity or condescension at what they felt was an old man's pursuit of a chimera. Wolfgang Pauli, Nobel prizewinner in 1945, and close contemporary of Einstein, summed up his feelings regarding the chances of attaining a unified field theory by saying, "What God hath put asunder no man shall ever join." Einstein knew that he had swum into a scientific backwater, yet the indeterminacy, the statistical and probabilistic approach of modern quantum mechanics remained abhorrent to him. He believed with all his heart and soul in causality. That was what he meant when he uttered his famous remark, "God does not play dice with the world." Quantum Theory was not necessarily wrong, he said, it was just incomplete. Some day he would fill in the gaps.

Prophetic warning about the bomb

But time was running out. When one physicist asked him, "Why do you keep working on this?" Einstein answered, "Some one has to work on it. I can afford to do it. I'm not a young man like you." And so he persisted, trying to resist the intrusions of the outside world. Because of his great fame and renown for generosity, he was besieged constantly by requests for lectures and personal appearances. "The only way to escape the personal corruption of praise is to go on working," he said. "One is tempted to stop and listen to it. The only thing to do is to turn away and go on working. Work. There is nothing else."

Yet he could not turn away entirely, and time and again circumstances forced him into the arena of world events. The most dramatic of these episodes occurred in the summer of 1939 when, at the urgent request of physicists Leo Szilard and Eugene Wigner, he addressed a historic letter to President Roosevelt warning him that German scientists may have discovered a way of setting up nuclear chain reactions in uranium. "Certain aspects of the situation seem to call for watchfulness and, if necessary, swift action on the part of the Administration," he wrote. ". . . . it is conceivable . . . that extremely powerful bombs of a new type may . . . be constructed. A single bomb of this type, carried by boat or exploded in a port, might very well destroy the whole port together with some of the surrounding territory." Einstein's letter was a prologue to the Manhattan Project, Alamogordo, Hiroshima and Nagasaki, and so its author, who was also author of the portentous equation $E = mc^2$, became the reluctant father of the atomic age. It was a role he did not relish, and he later told Linus Pauling: "I may have made one great mistake in my life—when I signed the letter to President Roosevelt recommending that atom bombs be made, but there was some

hexa·photo·cybernetic

Technology this advanced deserves its own word.

The incredible new Canon A-1. It's on the cutting edge of technology, with state-of-the-art electronics and computerized operation.

Yet, although the way we build it is complex, the way you use it is the ultimate in simplicity. If pushbutton-easy fine photography is what you're after, the A-1 can give it to you six ways.

1 Shutter Priority automation: You pick the speed to freeze or blur action or prevent camera shake, the A-1 picks the perfect aperture automatically.

2 Aperture Priority automation: Select the aperture you want for a soft background or total overall sharpness, the A-1 will give you the speed that's correct.

3 Programmed automation: On the A-1, this unique exposure mode picks both aperture and speed in ideal combinations depending on the light. You don't have to set *anything*.

4 Stopped-Down automation: This mode lets you get automatic exposure with any lens or accessory you can mount on the camera. Great for astrophotography, photomicrography, close-ups.

5 Flash automation: The A-1 has the easiest electronic flash of any camera of its type. With special Canon flash units, your aperture *and* speed are set automatically. Just mount the flash, turn it on and shoot for perfect exposures every time.

6 For any type of photography that's not already covered, there's a manual.

There's more. Digital control and viewfinder display. Versatile control features. Accessories like a rugged motor drive, compact motorized film winder and interchangeable date/data back. Plus forty Canon FD lenses for unsurpassed image quality and sharpness.

You won't find another camera like it on the face of the earth. Because only Canon has the technology to make it. Luckily, you don't have to go to the ends of the earth to get an A-1. Only as far as your local Canon dealer.

THE OFFICIAL 35MM CAMERA OF THE 1980 OLYMPIC WINTER GAMES

Canon® A-1

So advanced, it's simple.

Canon USA, Inc., 10 Nevada Drive, Lake Success, New York 11042
140 Industrial Drive, Elmhurst, Illinois 60126 • 123 Paularino Avenue East, Costa Mesa, California 92626
Bldg. B-2, 1050 Ala Moana Blvd., Honolulu, Hawaii 96814 • Canon Optics & Business Machines Canada, Ltd., Ontario

justification—the danger that the Germans would make them." When the bomb exploded over Hiroshima, Helen Dukas heard the news and told Einstein when he came down for tea. With infinite sadness he murmured, *"Oh weh!"* which can be translated only palely as "Alas!"

In 1952 Einstein appeared again on the international stage. Chaim Weizmann, first president of Israel, died, and within days Einstein was asked to succeed him in office. Slightly incredulous, he refused, despite special entreaties by Prime Minister David Ben-Gurion, Ambassador Abba Eban and Zionists throughout the world. In a gentle letter to Ben-Gurion he wrote: "All my life I have dealt with objective matters, hence I lack both the natural aptitude and the experience to deal properly with people and to exercise official functions. For these reasons alone, I should be unsuited to fulfill the duties of that high office, even if advancing age was not making increasing inroads on my strength."

Einstein was not well at the time—he had suffered from cardiac disease for some years—and in the remaining 29 months of his life his strength diminished, though the clarity of his mind and dedication to his scientific goals never waned. He died in Princeton Hospital shortly after midnight on April 18, 1955.

When internationally renowned scientists read their papers on Einstein at the many centennial convocations next month, his work will be illuminated in varying hues. But on basic judgments there can be nothing but unanimity. It will be agreed that the Special Theory of Relativity, put forth in 1905, and the General Theory of Relativity, following in 1915, still tower today as monumental triumphs of the human intellect and remain embedded in the very heart and core of our scientific heritage. They stand today basically unshaken by new findings. It will be recalled, too, that Einstein won his Nobel prize not for Relativity, but for his classic analysis of the photoelectric effect—also published in 1905—which profoundly influenced later work in Quantum Theory and pointed the way to technological applications in spectroscopy, television, the laser and other byproducts of the photoelectric cell. Einstein would be recognized, as Max Born once observed, as one of the greatest theoretical physicists of all time "even if he had not written a single line on relativity."

Some speakers may ask what effect new phenomena in the realms of astrophysics and nuclear physics might have exerted on Einstein's thought. How, for example, would he have reacted had he known about quarks and quasars, bosons and fermions, pulsars and black holes? Might they possibly have abetted his drive to understand the universe or his quest for a Unified Field Theory? Quite possibly. For there appears to be a renascence of interest in field theory, a spark of belief that some unborn genius may discover causal relationships in the events of the atomic world.

Over and above Einstein the scientist, many of the centennial papers will honor Einstein the man—telling of his easy grace, compassion without condescension, lack of vanity, sense of humor, and love of beauty. His famous utterances will be repeated: "I have no special gift—I am only passionately curious. . . ." "The most beautiful and most profound emotion we can experience is the sensation of the mystical. It is the sower of all true science. . . ." "My religion consists of a humble admiration of the illimitable superior spirit who reveals himself in the slight details we are able to perceive with our frail and feeble minds. . . ." "God is subtle, but he is not malicious."

Spinoza was Einstein's favorite philosopher, and some of Einstein's friends—especially Helen Dukas—hope that someone at the centennial will quote from a poetic tribute to Spinoza that was written by a Protestant theologian named Friedrich Schleiermacher some 150 years ago. The lines have been applied to Einstein by others, and indeed he knew them well: "The infinity was his beginning and his end, the Universe his only and everlasting love. In holy innocence and deep humility he beheld himself mirrored in the eternal world, and perceived how himself was its most amiable mirror. . . . Wherefore he stands there, alone and unequalled, a master of his art, but sublime above the profane rabble, a peerless beacon forever."

Sculptor Robert Berks works on a controversial statue for grounds of National Academy of Sciences. Columnist Dan Greenberg called it a "grotesquely inappropriate" memorial to the self-effacing Einstein.

Very Fifth Avenue

CHRYSLER

A PRODUCT OF CHRYSLER CORPORATION

Dedicated to the most exclusive avenue in the world.

This is the new look on Fifth Avenue. Chrysler New Yorker Fifth Avenue. The most luxurious Chrysler made. One of the most luxurious automobiles in the world.

A tribute to the most exclusive avenue in the world. Fifth Avenue. A remarkable new design achievement. Handsomely detailed and dressed in an exclusive designer cream-over-beige paint treatment and coordinated leather seating.

A special edition automobile.

equipped with a unique list of elegant accessories such as custom leather-wrapped tilt-steering wheel, wire wheel covers and specially made, whitewall radial tires with gold accent stripe. Standard power-assisted features even include power windows.

Chrysler New Yorker Fifth Avenue Edition. Fashioned to be in style on the most exclusive avenue in the world.

Very elegant. Very exclusive. Very Fifth Avenue.

Chrysler New Yorker

Fifth Avenue EDITION

© Arnold Newman

Willem de Kooning, Dutch-born painter whose work flowered in New York City and who is now known throughout the world as a preeminent American artist, here in his studio with recent paintings.

By Benjamin Forgey

An all-star quintet from the 1960s, now 'old masters'

This year's Corcoran Biennial is slimmed down to 30 works by a handful of major artists working at the peak of their talent

One of the most unusual things about the gallery opened in the nation's capital in 1874 by William Wilson Corcoran was its aim of "encouraging the American Genius." Corcoran, the self-made prominent citizen who amassed a fortune in the 1840s helping the federal government pay for the Mexican-American War, devoted the final decades of his long life (he died at 89 in 1888) to good living, philanthropy and art. The gallery that bore his name (now the Smithsonian's Renwick Gallery) was his favorite and probably most important good deed—although some might champion the Washington Monument, which he supported avidly, for that distinction. The Corcoran Gallery reflected his belief in American art at a time when most American millionaires were convinced that the word culture—if they thought of it at all—started with a capital E, for European.

Thus it was totally in keeping with the founder's ideas when the director and trustees of the gallery decided some years later (and from their present building, opened in 1897) to establish something called the Biennial Exhibition of Contemporary American Oil Painting. That was in 1906, when the American inferiority complex as defined, in this case, by European art was still running strong (some might say justifiably so, but that is another story). All that and, of course, much, much more has changed in the seven decades between the first Corcoran Biennial and the 36th, which goes on view February 24 through April 8.

W. W. Corcoran, and maybe even Teddy Roosevelt who, as President, attended the first opening, would have been surprised to take note of the progress made by the "American Genius" in this century, although it is hard to say what either would have made out of the specific twists and turns the national muse has taken to attain its current, proud stature in the world.

Of course, like any institution that lasts, the Biennial itself has changed some over the years. First to go, and it was no big thing, was the haughty insistence on oil paintings. Then came the demise of the system of juries and prizes, joint victims of the egalitarian urges of the 1960s and the tremendous rush of new art and artists. Last came the matter of size and composition. That first Biennial contained 397 paintings and was reasonably representative of the state of American painting at the time. Recent shows have averaged between 50 and 75 works. This one has about 30.

This has been the really fundamental change, for it became increasingly apparent that a single exhibition could no longer even pretend to cover the ever-expanding, ever more diverse field of art. The noteworthy thing is that the Biennial did survive as a showplace for contemporary American *painting*, no mean trick in the late Sixties and early Seventies when the cant about "painting is dead" reached a nearly ear-splitting crescendo before sliding into today's tired, desultory diminuendo. Painting has had to move over to allow space for some bright new kids on the block, but it is alive and well and so, consequently, is the Biennial exhibition designed to celebrate the ancient act of making marks on a flat surface.

It was in just such a mood of celebration, not to say cerebration, that the Corcoran's associate director, Jane Livingston, must have made her defiantly conservative decision regarding the 36th Biennial. It would be, she told herself, the most honed down, rigorously limited Biennial in the 72-year history of the show. It would, in fact, consist of the very latest works by just five painters, five very famous, very on-top-of-it painters: Willem de Kooning, Robert Rauschenberg, Jasper Johns, Roy Lichtenstein and Ellsworth Kelly.

Jane Livingston, 34, surveyed the historic scene and asked herself: "Where is the *best* painting coming from today?" And answered: "According to me, it's coming from the masters of the Sixties."

One might be tempted to argue the point (and surely many will give in to the temptation) and also to wonder why so-and-so, equally famous and equally mainstream, was not selected while so-and-so was, but it would be foolish disputation, like arguing with the dealer after everybody has agreed that the card game

Benjamin Forgey, art and architecture critic for the Washington Star, *wrote about the art of Isamu Noguchi in* SMITHSONIAN, *April 1978.*

Photographs by Arnold Newman, Yale Joel and Flip Schulke

Ellsworth Kelly, who rose to the forefront of painting in the Sixties with lucid geometric, purely colored partitioning of rectangular canvases, is today shaping monochromatic, although far from simple, works.

is dealer's choice. In any case, Livingston's selection makes a fascinating, short list on at least two counts: the similarities shared by the artists she chose, and the differences. Obviously, the more pronounced similarity among these five painters has nothing to do with their work, which is, in fact, extremely divergent in style and operating premises. Each of these men is wealthy and busy and self-made.

Although only one of these painters (Lichtenstein) was born in New York City, all are strongly identified with that art metropolis, having fed from and contributed to its energy for years, and having experienced their greatest successes there. (This identification with the art capital was another of the conditions Livingston set when she was making her list.) Curiously, and perhaps not quite coincidentally, each followed a classic pattern on the way up: birth and early years in provincial cities and towns (even Lichtenstein spent an important part of his life in Ohio), followed by eventual migration to New York and intensive involvement with its art life, including a struggle for artistic self-identity and recognition.

After success had arrived definitively, however, each of these painters felt the need to escape the noise and bother of the Manhattan art world. To be sure, none of this group has severed connections with the New York marketplace (of ideas as well as objects), but each now lives and works in unostentatious isolation outside the city—Rauschenberg as far away as Captiva Island, in the Gulf of Mexico off Florida's southwest coast; Johns and Kelly in wooded country north of the city; de Kooning and Lichtenstein out in the Hamptons, those elegant Long Island towns that are like extensions of the New York art world.

Jasper Johns' cast ale cans, American flags and numbers became symbols for many of life

Each of these artists needed, at a crucial midpoint in his career, both distance and space to carry out his work, for there is at least one other strong link connecting the five persons in this show, and that is a prolific and prodigious capacity for work. Livingston took a certain risk in this show in that when she started, more than a year ago, she didn't know precisely what the work would look like.

At 75, Willem de Kooning is the grand old master of this elite little group (and of many outside it), a European-born progenitor of the quantum leap that American painting took during the 1940s. Although he wasn't given a one-man show until 1948, when he was 44 years old and a fully mature painter, de Kooning became Mr. Painting during the 1950s, perhaps the most influential (and certainly the most imitated) member of that supertalented generation of painters grouped under the title of Abstract Expressionists.

In any case, de Kooning moved to East Hampton full-time in 1963 and his reputation went into something of an eclipse just as the other stars in this show were rising. It didn't matter, for de Kooning was beyond financial worries and he continued to paint with furious concentration and skill. The light and the color of the Hamptons much influenced his paintings, as well as an extraordinary series of small sculptures on such local themes as *The Clamdigger,* figures whose surfaces are so alive with the painter's touch that they seem only accidentally encased in bronze.

De Kooning, in 1975, began a series of paintings that are as abstract, as complex, as intense and as good as anything he had ever done. With these works de Kooning joined a very elite group of 20th-century masters, a little list headed by Henri Matisse, who were in the United States, and of avant-garde art; he is today exploring a "weighted and closed" imagery.

able to turn old age into a celebration of art and life.

The other painters in Livingston's show belong to a different generation, the one that succeeded the supremacy of the Abstract Expressionists. In fact, so different is their work that each seems almost to belong to a separate generation, in spite of the relative closeness of their ages (Johns, the youngest, is 49; Rauschenberg is 54; Kelly and Lichtenstein are 56).

Rauschenberg, the erstwhile enfant terrible of the New York School (ironically, one of his first works to earn notoriety was a de Kooning drawing that he erased, then signed and titled *Erased de Kooning Drawing),* was the first to emerge from obscurity.

He, too, suffered something of a fall from critical grace during the late 1960s and early 1970s, but he also continued to work at breakneck pace and with his customary effervescence. The big pieces of his in the Biennial (and *all* of the works in the show are big; de Kooning's paintings, more than six-and-a-half feet high, are relatively modest in this company) are wonderfully elegant concoctions called "spreads," collages that touch upon all of his major themes.

Johns, the reticent Southerner who was befriended by Rauschenberg when they both were outsiders in the early Fifties, catapulted to fame even more suddenly than his friend, and to an even more befuddled critical hostility (which changed soon enough to awed respect). Today it seems odd, however, that 20 years ago their works commonly were mistaken for each other's.

Nobody visiting the Biennial will make that mistake, for Johns' new paintings—dense accumulations of hand prints and hatch marks—are as weighted and closed as Rauschenberg's are light and open. Livingston is convinced that Johns' recent works are his best, particularly a little painting (at four-by-five feet the smallest thing in the show) titled *Usuyuki (Thin Snow),* which carries a paradoxical sense of lyricism to Johns' customary dark, enigmatic, existential mood.

Lichtenstein was one of the original group of pop artists who, following leads established by Johns and Rauschenberg, brought back common, readable imagery to New York painting, albeit in a cool, ironical tone that seemed perfectly suited to the critical, and popular, ambience of the early Sixties.

From the distance of a decade and a half, the pop artists seem less and less like one another—indeed, this theme of individuation is a principal leitmotiv of Livingston's show. Lichtenstein's recent panel paintings clearly grow from the same hand and sensibility that excerpted comic-strip images and mass-reproductive techniques (such as the use for artistic purpose of the commercial lithographer's Benday dots) but they are much more complex. A brilliant, big painting such as *Razzmatazz,* for instance, refers not only to popular imagery but also to ancient and modern art, a sort of tour-de-force narrative assembling of images whose final meaning is ambiguous and disturbing despite (or perhaps because of) the crisp, clean style.

No "hard-edge" for Kelly

Another strain of Sixties cool is represented in the works of Ellsworth Kelly, except that he doesn't really fit that mold either. Kelly spent his crucial early years as an artist in Paris, and his particular brand of geometrical abstraction obviously owes something to European predecessors such as Mondrian and Max Bill, as well as to American conceptions of size and scale. Kelly's paintings at least seem as straightforward as his words. When asked by an interviewer once why he rejected the label, hard-edge painting (by now a dated label, to be sure), Kelly simply said, "Because I don't like most hard-edge painting."

He also said, "I think my paintings are easy to like, but you have to want to like them." Such swift, to-the-point observations are very much in keeping with the authoritative, radical elegance of the works he submitted to the Corcoran show—immense, titled shapes of monochromatic but luminous color, combining razor-fine straight edges with arcs. These paintings are clear, honest statements whose precision has less to do with mathematical or esthetic formulas than with intuitive grace.

One thing is certain, and it is that none of these paintings will ever look much better than at the Corcoran. It is a great paradox that the immense, sky-lit galleries of architect Ernest Flagg's Beaux-Arts building, designed with turn-of-the-century academic work in mind, turned out to be absolutely spectacular showcases for modern art. The Corcoran is as fine a place as there is on Earth to celebrate the fact, and the act, of painting.

Roy Lichtenstein, among best known and most successful of the pop artists, with recently completed *Stepping Out,* done in crisp style.

Robert Rauschenberg was one of the first to gain eminence in the second wave of influential New York School, here displays a kitelike "spread."

"Just one more question for our files, Sir."

At what point do corporations' requests for personal information become an unwarranted invasion of our privacy?

How many of the questions they ask (and answers they demand) are really necessary? How much information do they already have about us? Where did they get it? How accurate is it? And how freely do they exchange it among themselves?

Because these questions worry so many Americans today, Ætna wants to tell you how we are committed to doing business when you come to an Ætna agent or broker for personal insurance:[1]

We'll ask you for the information we need, and no more. We'll tell you what data we're after, how we intend to get it and from whom. If we turn you down, we'll tell you *why.* (And we *won't* turn you down just because someone else has.)

If you think we have misinformation, just ask what we've got. We'll tell you the nature and substance of all underwriting information in your file. (Except medical information which we'll give your doctor.) If you say some part of it is wrong, we'll reinvestigate—and respond.[2]

And we'll go out of our way not to pass on information about you without permission.[3]

By openly discussing our policies on privacy, we hope to encourage action among governmental and private organizations. And to insure this, we support both voluntary and legislative measures as recommended by the federal government's Privacy Protection Study Commission.[4]

Today the burden of proof rests upon business and government to show that we deal fairly and openly with private citizens. Don't underestimate your own influence in helping to protect your personal privacy. Use it as we are trying to use ours.

Ætna is protecting your privacy.

---

1 When any state law requires us to act differently, naturally, we must comply.

2 "Respond" means: If we are wrong, we'll correct the error by informing our source and anyone else you request who received the misinformation from us in the past two years. If we conclude our information is correct, we'll tell you so. If you ask, we'll even put your disagreement in the record. We'll also distribute that statement of disagreement in the same way as we would correct an error.

3 Occasionally, sound business reasons dictate exceptions (and we let you know what they are in advance). For example, Ætna will provide information needed by those selling or servicing our policies, for fraud prevention, or when required by law.

4 The federal Privacy Act of 1974 which established controls over the federal government's use of personal information, also created the Commission to explore the need for similar restraints on local governments and businesses. Ætna's President, William O. Bailey, served on this commission and the conclusions it arrived at are the basis for Ætna's privacy policy.

Further information may be obtained by contacting Henry L. Savage, Jr., Public Relations, Ætna Life & Casualty, 151 Farmington Avenue, Hartford, CT. 06156, Telephone (203) 273-6545.

Ætna
LIFE & CASUALTY

Ætna Life & Casualty,
151 Farmington Avenue,
Hartford, CT 06156

Old stereographs, saved from oblivion, stir our memories

Americans got visual kicks from 3-D device whose pictures live on in California in a mammoth, mostly forgotten collection

Father seems so interested in the stereograph that he apparently doesn't notice son's departure.

Before television, millions of people got picture entertainment in their homes by means of an optical device known as a stereoscope which produced three-dimensional images. For nearly a century, stereographic viewing was a favorite parlor game. A collection of two-image cards would be passed around and inserted in simple, hand-held stereoscopes. You'd bring your card into focus with a quick adjustment and suddenly you'd be staring at a natural or man-made wonder, an exotic scene, a disaster, a conference of world leaders or perhaps a bit of broad comedy, all appearing in depth.

Recently the world's largest known surviving collection of stereograph cards and negatives, the Keystone-Mast Collection, was rescued from dead storage and donated to the California Museum of Photography at the University of California, Riverside. Composed of about 140,000 stereo cards and almost 350,000 negatives, mostly glass, it is valued at $1.2 million.

Among these unearthed 3-D treasures are Generals Grant and Meade conferring in Virginia, the (animal) bone-strewn battlefield of Custer's last stand, the sunken USS *Maine* and stark execution scenes that marked the end of the Boxer Rebellion. There is Mark Twain shooting billiards, Edison, Teddy Roosevelt, Booker T. Washington, Carl Sandburg, and on and on.

By the early 1900s, such stereographs had become potent teaching aids and were generally sold door-to-door in boxed sets. One manufacturer blurbed on the cards: "Around the World Without Leaving Your Home—Just Like Being There." The emerging middle class, proud of their nation and seeking self-improvement and wider horizons for their children, gobbled them up. Americans felt they could reach out and touch every President from Lincoln to Eisenhower.

Stereo photographers filled the demand by lugging their heavy, two-lens cameras and equipment around the world. Despite the lack of light meters, long lenses and sometimes even shutters, they took amazingly high-quality photographs. The stereo principle simply attempted to re-create binocular vision. The two lenses were usually 2½ inches apart, the average distance between the pupils of human eyes. Two prints, made from negatives taken from slightly different perspectives, created the illusion of the third dimension when the brain combined the two images. The cards, or slides, usually carried descriptive, "educational" material printed on the back. The illusion cannot be duplicated on a two-dimensional page such as this, but anyone with military photo-interpreters' glasses can see the third dimension in the pair of photos above.

As we became automobile-oriented, our demand for vicarious travel diminished. Later, television took over the role of visual entertainment in the home, and the popularity of stereographs declined.

"Bliss Disturbed" inspired 1900 yuks. These are the near-duplicate images for the viewing apparatus.

The largest single mass of them was stored in three concrete vaults in an old brick building in Meadville, Pennsylvania. Glass and cards, weighing more than 30 tons, covered 1,200 square feet. The Keystone View Co., largest American stereograph manufacturer, originally owned this hoard, but it was bought in 1963 by the company of the late Gifford Mast. Rumors of the Keystone-Mast collection reached a California industrialist and camera buff, Mead Kibbey, who tracked down Gifford Mast II in Iowa and talked him into donating it to the museum at the University of California—that is, if the university wanted it.

Wanted it? When the question was put to museum director Edward R. Beardsley, he replied, "I'd sell my soul for it!" So with great care, difficulty and even adventure, the pictures, including 67,000 pounds of glass negatives, were moved across country without breaking a slide. They were stored briefly at the Graphic Technology Co. of Fresno whose president, Jerome B. Laval, another photography freak, supervised the move from Meadville.

As soon as the renovation of the building which will house it permanently is complete, and the collection is catalogued, viewers once more will be able to lose themselves in views of recent history and mores, as well as "comic" pictures (cover and top of these pages). Yet the pictures, as Beardsley says, are "the kind of literature that has remained virgin territory for years . . . a wide, unknown, untapped resource."

—Jack Harrison Pollack

"A Dervish cut through with saber and spear" is the 1899 caption. But India is full of illusions.

Through earlier Russian curtain

Among the greatest treasures of the Keystone-Mast collection are some remarkable views of Czarist Russia. They give extraordinary insight into a land of enormous disparities between peoples and places, of vast gaps in economics and culture that resulted largely from the absence of a solid middle class.

Pictures show peasants wallowing in destitution, royalty posing in bejeweled splendor, Cossacks brandishing swords. There are war scenes from Port Arthur and winter scenes from outside the Kremlin. Such stereographs gave Americans of the time a cursory glimpse of Russia divorced from context. Interesting, though less immediately compelling than a view of the Grand Canyon. It is only with today's hindsight that these Keystone-Mast pictures become revealing.

The photographers apparently had access to the even then somewhat mysterious Russian life. They could take pictures of peasants—about four-fifths of the population (170 million in 1914)—which made them look like slaves (they were not, but neither were they totally free), downtrodden by ruthless landlords (exaggerated) and burdensome laws (which indeed existed, but often were ignored). On the other hand, stereographs could make the Czar and his court appear to be enthroned on the peak of extravagance without sparing a thought for the masses, often the case. More realistically, Nicholas II went about in peasant smock during much of the day, ate simply, would have been happier as an ordinary man, and worried about the masses as much as he worried about anything.

A shy, gentle man, Nicholas had early learned austerity from his frugal father and his mother who set a 50-minute limit for meals. Since the children were the last served, they rarely had time for more than a few bites before the plates were removed. It is said that "Nicky" once got so hungry under this regimen that he tore apart a gold cross and gulped down the bees-

Russian reinforcements move into fortifications at Port Arthur, where Japanese attacked

without declaring war after Czar Nicholas II
was egged into disastrous imperialist foray.

In Czarist Russia, enveloped in bureaucracy,
water was apportioned at such "stations."

Cossack "marksman" shows off for the camera.
These soldiers were a fierce military elite.

"Fishermen—Volga River" gave Americans a sense of the primitive level of this industry.

Barefoot in the mud stand peasant villagers at one end of Russia's social spectrum.

wax with which it was stuffed. It happened that the wax also safeguarded what was supposed to be a tiny piece of the True Cross—but down went the relic, too, to ease the growlings of the Czarevitch's tummy.

Not only his father, but practically everybody seems to have dominated Nicholas: his German wife, Alexandra, whom he adored, his cousin Willy (Kaiser Wilhelm II of Germany) who egged him into policies that provoked the Japanese, his political and military advisers who pushed him into World War I—the *coup de grace* for Imperial Russia. The peasants blamed the state and its officials for the disastrous results of the Czar's persistent bad judgment—a compendium of almost treacherously bad advice, of his own blindly unyielding conservatism and what may have been the rottenest luck ever vouchsafed a royal head.

At the very start of his reign, the pattern was set. Peasants gathered in a Moscow field for a traditional fair to celebrate the coronation. And this time, in 1896, a rumor swept through the gathering that there was a shortage of cups for the free beer. A mindless rush ensued in which some 2,000 people were trampled to death. Bad enough. But then the Czar's advisers saw to it that he was not told of the tragedy until they were

A Russian family is pictured "lunching with the dead" at a St. Petersburg cemetery.

Traditionally devoted to the Czar, their "Little Father," they finally destroyed him.

Cossacks put on one of their sword-rattling dances. Most remained loyal to the Czar.

"Russian lovers at the old well" shows that scenes could be hoked up there as well as here.

A grim view of Russian peasantry. It was really better off than in many other countries.

on their way back to the palace. To make matters worse, Nicholas was diverted from his determination not to attend that night's ball. So he and Alexandra danced and partied while thousands wept.

And so the ill-fated reign progressed: the humiliating defeat by the Japanese; the horror of the mass march on the Winter Palace in 1905—peaceful in intent, but insanely confronted and blasted by gunfire by the Czar's troops, without his knowledge; the hemophilia of Alexis, the little Czarevitch; the drift into war; the Czar's distrust of the Duma, the Russian parliament; the scandal of Rasputin; the Revolution, abdication and assassination. . . .

The tragedy lurks behind pictures of street scenes, of palaces and garden parties, of ghettos and barnyards, of parades and receptions, of rustic firesides and communal baths. Looking at them now, one seems to see the poor Czar—gentle, unworldly, weak Nicholas—long doomed, the middle path of democracy notably missing from the scene, the Revolution on its way.

German officers in Moscow for the coronation of Nicholas and Alexandra in 1896 pose with General Adjutant Prince Dolgorukov, seated second from left; another Russian is at right.

These ladies at the coronation are members of the Imperial family and related royal families of Württemburg, Mecklenburg-Schwerin and Altenburg. Seated imposingly in the center are Grand Duchess Alexandra Iosifovna and the Duchess of Connaught (right). The latter's lady-in-waiting sits in front. Princess Albert of Altenburg stands at the far right. Pages appear in the rear.

On Cape Cod, relaxing at the bottom of the "pool."

By David Martindale

New homes revive the ancient art of living underground

Decorated caves and dugout houses are part of our past. Now architects have new motivation to build down instead of up

In the Florida sand dunes, a futuristic bunker.

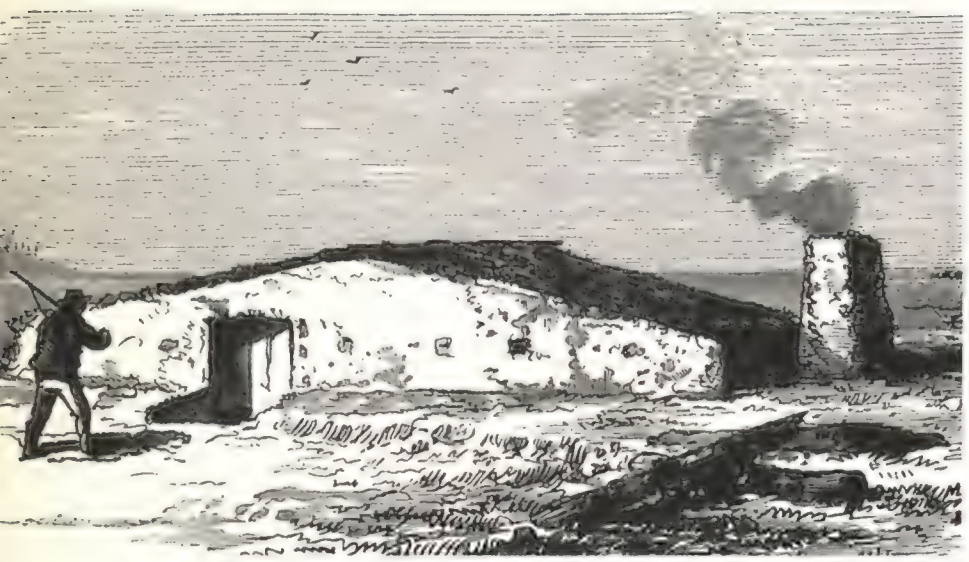
When University of Minnesota planners first decided to build Williamson Hall, they asked architect David Bennett to comply with three directives. First, the structure was to preserve the view of two historic campus buildings. Secondly, it was not to impede the flow of pedestrian traffic which bisected the site. And finally, it was to adhere to the university's energy-conservation guidelines. Bennett chose to let form follow function. Instead of building up or out, he opted to build under. Today 95 percent of Williamson Hall is underground (opposite).

Located on the university's Minneapolis campus, Williamson Hall houses a bookstore as well as the Admissions and Records (A&R) department. The 83,000-square-foot structure consists of a grade level slab above the bookstore and two levels completely underground. Opened less than two years ago, the

In Virginia, only a skylight and solar collectors.

In Wisconsin, skylights betray a buried presence.

In Minnesota, terraces are the tip of the bookstore.



Sod-covered prairie homes of the last century, such as this one in Kansas, were celebrated in song:

Oh, the hinges are of leather.
And the windows have no glass.
While the roof it lets the howling blizzard in;
And you can hear the hungry coyote
As he sneaks up through the grass.
In that little old sod shanty on the claim.

building not only met the directives issued by university planners, but it also cost approximately three to five percent less to build than a similar structure above grade would have.

Historically, of course, there's nothing new about using the earth as a shelter. Caves served as Man's first dwellings, and earth-sheltered structures have existed for centuries in China, Spain, Turkey and Tunisia. Sod-walled dugouts were common on the great plains in the last century (above). But Williamson Hall is part of a new breed—one of dozens of carefully designed earth-sheltered buildings which have been constructed since the beginning of the decade. The hidden buildings on pp. 96-97 are opened up visually in the pages that follow. Some of these structures, particularly the earlier designs, were placed below ground to preserve open space. Yet ever since the Arab oil embargo, an increasing number of architects and planners have selected earth-sheltered designs for yet another reason: dramatic savings in heating and cooling costs. Using the earth itself to create a more energy-efficient envelope, commercial, industrial and residential owners alike are discovering a way to hold down ever-soaring utility bills. And in the process they're fueling a back-to-nature architectural trend which could profoundly alter the design and efficiency of tomorrow's buildings.

Why the term "earth sheltered" rather than "underground?" To begin with, not all such structures are truly below grade level; hence, "earth sheltered" is a more accurate, all-encompassing term. And secondly, advocates of this unique brand of architecture recognize that for many people, the very word "underground" triggers near-visceral impressions of dark, damp, claustrophobic, even frightening space. Frequently such notions can be traced to unpleasant associations with basements, subways, sewers, bomb shelters—indeed, hell itself. Little wonder there are those who scoff at the concept of an attractive, well-lighted, earth-sheltered building.

But consider Williamson Hall:

Determined to allay the fears of university employees about being "stuck in a hole in the ground," Bennett designed a virtual playground of imaginative, sun-drenched space. Aboveground clerestory windows look down upon the brightly lighted bookstore sales area on the lower floor (p. 105). The nearby A&R department surrounds a courtyard lined with rows of windows which allow sunlight to bathe the mezzanine as well as the lower floor area.

Because the soil protects the building from daily temperature fluctuations and the adverse effects of the wind, temperatures in Williamson Hall never drop below 50 degrees F. even when the heat is shut off during the winter evenings and weekends. (Contrary to popular belief, earth is *not* a very good insulator. It takes three feet of soil to provide the same insulation as a three-quarter-inch thickness of polyurethane. The earth is, however, an excellent temperature moderator.) Little wonder heating and cooling systems in such earth-sheltered buildings are seldom very large. Nor are they wasteful, since they are able to operate at a more even, hence efficient, load.

Earth-sheltered buildings also provide a very large thermal mass which is used as an energy-storage system. Williamson Hall, for example, has the ability to store the waste heat generated by lights, machinery and people. According to Thomas Bligh, an associate professor of mechanical engineering who recently left the university for the Massachusetts Institute of Technology, this is the reason why heat seldom has to be turned on in the building. In addition, Williamson Hall also has the ability to store passive solar energy which streams through the south-facing windows along the A&R courtyard. During the winter months, this results in a slow but steady rise in the temperature throughout the day. During the summer, ivy in overhead planters blocks sunlight while providing added esthetic appeal.

Not surprisingly, active solar systems are a natural adjunct to the earth-sheltered concept. And because such structures are so energy efficient, smaller collec-

David Martindale, whose work has appeared in many major magazines, is now a Washington-based writer specializing in the science and health field.

In limestone caverns deep beneath Kansas City, an industrial park takes shape. More than 100 companies employ some 2,000 people in underground maze that now occupies 18 million square feet and is growing.

tors can be employed, resulting in substantially less capital investment. Recently, a solar-collector system was constructed for Williamson Hall that occupies just eight percent of the building's total area (this compares with a nearly one-for-one ratio in many aboveground buildings). Once this system is fine-tuned, Bligh estimates it will supply half of the energy now required for heating and cooling.

Similar energy savings are predicted for Terraset, an elementary school in Reston, Virginia (p. 104). Operated by the Fairfax County School Board, Terraset has been called "a hill with a school inside." Protruding above the center of the hill, a skylight allows sunshine to reach the library, or "media center," which serves as the focal point for the $2.9-million school. Radiating from the center are four 100-foot diameter "learning centers," each designed for 250 children and each provided with a large curving window. Flanking the entrance courtyard are the school office, gymnasium, cafeteria and meeting rooms.

The concept of a school covered by dirt did, at first, raise some eyebrows. But for at least one part of the country, the use of underground space is hardly a novelty. Instead, it's an industry.

Each year in metropolitan Kansas City six million square feet of underground space is created as the result of limestone mining operations. The huge caverns left behind have flat, smooth ceilings supported by giant white pillars spaced every 50 to 60 feet (above). The excavations become sprawling underground industrial parks, complete with railroad spurs, truck docks and parking areas.

At depths of 50 to 200 feet beneath the ground, the temperature remains at a near constant 57 degrees, while humidity is a moderate 50 percent. Energy savings for cooling range anywhere from 70 to 90 percent, and heating bills are slashed 90 to 100 percent. At Inland Storage Distribution Center, more than 38 million cubic feet of space has been converted to food storage freezers. The energy saved in the underground complex is equivalent to that used by 7,600 homes.

Despite such savings, prospective tenants often exhibit the "Tom Sawyer, lost-in-a-cave" syndrome. "There are some individuals who are just psychologically opposed to going underground," says Donald R. Woodward, vice president of Great Midwest Corporation, a large underground lessor. Those who are not, however, generally praise the location.

Of course, the United States is hardly the first nation to begin realizing the vast potential of its underground space. In Japan, more than two dozen shopping centers are buried underground, and Montreal's Place Ville-Marie shopping complex spans several blocks beneath the city. Long a leader in underground technology, Sweden routinely places such structures as power plants, factories, warehouses and sewage-

Some new homes are going under

Above: Dirt has been pushed up to walls and onto roof of Baldtop Dugout in New Hampshire.
Below: Heat from sunlight coming through window is stored in slate counters, tile floors and walls.

In River Falls, Wisconsin, Pat Clark prepares dinner beneath kitchen skylight. Shell is steel culverts.

treatment plants beneath rather than atop the soil.

Nevertheless, the United States *is* pioneering at least one crucial use of subterranean space: the design of earth-sheltered homes. Many Americans are discovering that far from being "glorified basements," such earth-sheltered dwellings are, in fact, fuel-miserly land-savers with all the light and other amenities of any conventional home. Case in point: Baldtop Dugout in Lyme, New Hampshire (above).

According to architect Don Metz, when people first learn he lives in an earth-sheltered home, they usually ask a variation of one standard question: "Isn't it damp and cold and slimy and dark and full of cobwebs?" In most cases, Metz assures them that it's not. Occasionally, however, he allows such skeptics to take a look for themselves. Actually the second earth-

On Photographing a Monster

It *hates* being photographed. It glares balefully at the camera. It sulks, fidgets, pouts.

It is that most fearsome of creatures, a perfectly normal four-year-old child.

The photographer, wise in the ways of distracting difficult subjects, abandons his camera. He wanders about the studio, talking and gesturing. The monster, no longer feeling threatened by the evil eye of the lens, relaxes and becomes once more the sweet child its mother knows.

From time to time, the eye of the camera blinks. There is a quiet whirring of an electric motor, and the camera blinks again. Yet the photographer is nowhere near it.

An Ingenious Little Dial.

The camera is a Hasselblad, the motor-drive 500EL/M.

A dial on the camera is set at "SR." This prereleases the entire reflex system. At the end of a 20-foot extension cord, the photographer holds a release mechanism. When triggered, it operates the leaf shutter without a moment's delay, thus reducing the risk of "eye blink" from the subject and delivering a higher number of useable photographs.

There are four other settings on this dial: Single-frame in the normal mode. Continuous, automatic firing for as long as the release is held down. A single frame in the prereleased, speeded-up mode for one frame only. And continuous, automatic firing in the speeded-up mode at the rate of one frame every 8/10th of a second.

Hasselblad Versus 35mm.

Why is this photographer not using one of the many excellent motor-drive 35's for this assignment?

One compelling reason might be the size of the Hasselblad negative. Each is 2¼ inches square, *almost four times the area of a 35mm frame.* (See box, below right, for actual size.)

To make an 11 x 14 print of the child, one would have to enlarge a 35mm negative 11.6 times. A comparable Hasselblad print requires only a 7-times enlargement. The ability to hold contrast is phenomenal.

Then there is the camera's leaf shutter. Unlike the shutter of a 35mm camera, it is fully synchronized for every type of flash at every speed up to 1/500th of a second.

Hasselblad Versus Others.

But why a Hasselblad when there are less-expensive alternatives? Why did eight out of ten top professional photographers surveyed name Hasselblad as the medium-format camera used in their work?

Consider this: The Hasselblad System makes available no less than 4 cameras, 21 lenses, 8 viewfinders, 9 film magazines (including Polaroid® backs) that give you a choice of anywhere from 1 to 500 exposures, and a staggering array of accessories.

A total of 332 pieces.

No other system that exists today in the medium-format field can muster more than a fraction of that number of pieces.

For that matter, no other system offers three different formats—6 x 6cm, 6 x 4.5cm, and a 4.5 x 4.5cm superslide format for showing in any 35mm projector.

A lavish brochure on the 500EL/M and other Hasselblad cameras is available free if you write: Braun North America, Dept.SM2H, 55 Cambridge Parkway, Cambridge, Mass. 02142—a division of The Gillette Company and exclusive marketer of Hasselblad in the U.S.

It is actually possible to custom-build for yourself over 100 different Hasselblad cameras for almost every imaginable photographic situation—from the most simple of family snapshots to the most sophisticated of professional work.

Is it any wonder that the space program came to Hasselblad for the equipment which was to record man's first voyage to the moon?

HASSELBLAD®

The Motor-Drive Hasselblad 500EL/M, made in Sweden. The standard lens is a multi-coated f2.8 80mm Zeiss Planar.

What looks like an empty pool is the courtyard of underground house, Marstons Mills, Cape Cod (p. 96).

Interior of Florida dune house (p. 96) is light, airy. Shape of structure helps support weight on top.

sheltered home Metz designed, Baldtop Dugout was built largely by the architect himself. Calling the technology involved a "piece of cake," Metz insists "there are no special materials, no special equipment, no special trades required. Everything can be done by any competent contractor."

Although Baldtop Dugout cost more to build than a conventional home, all earth-sheltered houses are not necessarily more expensive. Architect John Barnard built his subsurface Ecology House in Marstons Mills, Massachusetts (left), for 25 percent less than a comparable aboveground home, using an atrium design. Submerged completely beneath the surface, the living room, kitchen and bedroom surround a sunken courtyard which provides ready access to sunshine as well as the view outside. Says Barnard's wife, Barbara, "I like to be outdoors more than in. So at first underground didn't interest me. But as far as I'm concerned, with an atrium like this, it's ideal. I love it." As for heating, Ecology House uses rooftop solar collectors as well as standard electrical resistance heating. Even without the heat pump Barnard plans to install, he saves 25 percent on his fuel bills. He also predicts these savings could be increased to 75 percent with a transparent shield over the atrium.

Insulation is still necessary

Metz insists insulation is vital in colder climates. "When the temperature gets down to 20 below," says Metz, "that earth freezes and it becomes a big ice cube." Acting like a thermal sponge, the earth sucks heat from inside the structure. Still, the soil *does* moderate. "No matter how much the soil freezes, it's still not likely to go 20 below," says Metz.

Some architects, however, elect to go deeper into the soil and avoid insulation completely. Frank Moreland is a professor of architecture at the University of Texas at Arlington and one of the most vocal advocates of earth-sheltered buildings. Recently, Moreland designed a Waxahachie, Texas, home which will be covered with nine feet of soil. The house is purposely designed to take advantage of the year-round temperatures—63 to 69 degrees—which exist at that depth in the Texas soil. The only drawback to building this deep is the tremendous additional weight placed on the roof of the structure—weight which may add significantly to the total cost of construction. Moreland, however, justifies the higher price tag. "For an 80- to 90-percent reduction in energy costs, it's worth the expense of construction," he says.

Some architects choose to solve this earth-pressure problem by eschewing flat roofs. For example, William Morgan has designed several dune houses along the beach in Jacksonville, Florida (left). Based on a com-

Now's the time to make a dream come true.

JAL's Orient. Mysterious and exotic, paradise and adventure, a multitude of cultures, customs, people and languages. It's all there for you to experience.

Come and watch Kabuki, a Japanese drama. Visit gilded palaces in Bangkok, admire ancient temples in Malaysia or just relax on one of Bali's beautiful beaches.

Now stop dreaming. JAL's Happi Holidays tours offer a variety of itineraries at prices that are lower than you may expect.

Choose one. You'll find it's the best way to make a dream come true.

For more information, see your travel agent or write Japan Air Lines. Dept. SB, P.O. Box 618, New York, N.Y. 10011

This year, the Orient.

JAPAN AIR LINES

HAPPI HOLIDAYS

puter analysis, Morgan selected a curved-shell structure capable of withstanding heavy earth loads. When Minnesota architect Michael McGuire designed the Clark-Nelson house in River Falls, Wisconsin (p. 100), he was able to create an inexpensive but sturdy shell by using two arching steel culverts, similar to those found in drainage ditches. And while geodesic domes have yet to be incorporated into earth-sheltered design, they may offer still another method whereby relatively little material can be used to support heavy earth loads.

Primarily because of experiences with leaky basements, many prospective earth-sheltered homeowners are particularly concerned about waterproofing. Yet within the last five years, new and more effective sealants have appeared on the market. Terraset, for example, is protected by an adhesive, rubberized asphalt. Says a school engineer, "It's the only roof we have in the school district that hasn't had a leak." And although not all earth-sheltered buildings are this fortunate—Williamson Hall has had some leaking problems—most report a watertight structure.

Although leaks are not a major problem, earth-sheltered homes do have their drawbacks. Among the more common:

- Soil conditions have to be suitable for construction. Hard rock is too expensive to excavate, while moist, swampy regions are inappropriate.
- Expansion of an earth-sheltered home, while not impossible, is often a difficult and costly undertaking.
- Particularly in densely populated urban areas, zoning and building code regulations often impede unique construction projects. Similarly, officials of lending institutions are hesitant about providing mortgages for a venture that some label a "fad."
- Most architects have had little experience in designing earth-sheltered buildings. According to Michael Barker, administrator for Practice and De-

Underground school in Reston, Virginia, costs half as much to heat and cool as comparable schools there.

Solar collector system, financed by Saudis as part of their research program, will cut costs even further.

sign with the American Institute of Architects (AIA), a few AIA members *have* done some award-winning work in the field. "But by and large," says Barker, "earth-sheltered buildings are looked upon by architects as something of a curiosity."

More research is needed before earth-sheltered buildings can become a ubiquitous theme of American architecture. "What we want to do now," says Bligh, "is to build a whole lot of these buildings rather carefully and find out what *not* to do in the future." Funded by a grant from, first, the National Science Foundation and, later, the U.S. Department of Energy, engineers at Williamson Hall are now closely monitoring energy losses through the walls and floors of the building. Once sufficient data are obtained, more accurate estimates of the heating and cooling requirements of earth-sheltered buildings will be possible.

Both Bligh and Moreland are particularly excited about the prospects of large, earth-sheltered residential developments. Each envisions a high-density arrangement with six to eight earth-sheltered homes per acre. Although such a development would be 21 percent more dense than the most crowded subdivision in present-day Minneapolis-St. Paul, it would still yield two-and-a-half times more green space than exists in the area today. Moreland foresees a similar community in which noise-free homes are sculpted into man-made hills and designed so that one home's roof is another home's front yard. And the Texas architect insists that the costs of such houses will eventually plummet. "My own personal view," says Moreland, "is that within three to five years, we'll have underground tract houses which will be built for two-thirds the cost of a tract house today."

Practical, imaginative architecture is hardly a panacea for the ills of urban society. Yet earth-sheltered buildings do suggest that we could just be standing on part of the solution.

Bookstore and offices underground at University of Minnesota use 60 percent less energy for heating and cooling than similar buildings. New solar collectors will cut heating bill another 55 percent.

Arlene Hoffman takes a close look at the growth in a pupa while other larvae munch away.

In an earlier office, this "Madam Butterfly" works amid greenery of egg-bearing milkweed.

Maturing larva bypasses chrysalis which has encased itself in its jade-green "lantern."

Young larva (right) on milkweed leaf is about to meet old one, which is vastly heavier.

Larva grows by molting out of skin four to five times within three weeks, then it becomes a chrysalis.

She raises monarchs in mid-Manhattan

Growing up in a Second Avenue office could be tough on a butterfly, but not when the firm's president is its foster mother

Strange things go on in a New York advertising agency office. But *butterflies*?

At Hoffman Mann, Inc., on Second Avenue, they've got butterflies. The president, Arlene Hoffman, brings them up from egg to full-fledged monarch once a year. Ms. Hoffman, smart and attractive, also brought you those incredibly aged Russians who ate yogurt on TV.

Arlene Hoffman has studied and raised monarchs for 16 years. Using her office is more recent, partly because her teen-age son got fed up with keeping the butterflies safe from his cats.

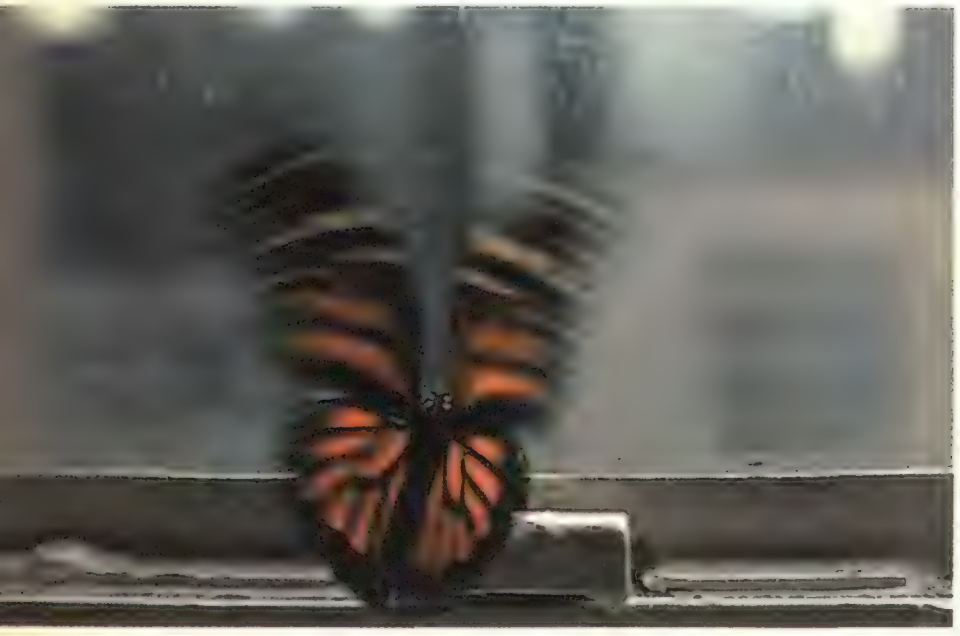
Around the first week of August, Ms. Hoffman, using a jeweler's "loop," spots eggs on the underside of milkweed along the Sawmill River Parkway and brings those plants back to her office. "The eggs look like tiny, beautifully ridged pearls under a magnifying glass. In the wild they would hatch in two to four days. In the office it always takes four. Hatched larvae are about as big around as a human hair."

They proceed to grow 2,000 to 3,000 times their original weight in the larval stage, while Ms. Hoffman keeps the cleaning ladies from knocking them off the milkweed. The first of four or five moltings takes place about two days after hatching. Each stays on its bit of leaf, munching it down "like corn on the cob," as Ms. Hoffman says. In the evenings, after the typewriters are quiet, she can hear them chewing.

The chrysalis stage comes next. Then, at last, the magic of the metamorphosis, the final show as the monarchs come out. They emerge, stretch gloriously, appear to breathe, then take first flight. "The males seem to want to migrate right off. The females linger to have a bit of honey. And then I just open the window, and off they go, over Manhattan."

Photographs by Peter B. Kaplan

Ms. Hoffman, eyeing newly emerged monarch, says "the wings look as though they need ironing."



New monarch feels migration's call (above) and gets Arlene's sendoff, high above New York.

The signposts of success are clearly lettered.

Seagram's V.O.

Bottled in Canada. Preferred throughout the world.

Enjoy our quality in moderation.

Canadian whisky. A blend of Canada's finest whiskies. 6 years old. 86.8 Proof. Seagram Distillers Co., N.Y.C.

By Rudolph Chelminski

Tatin's museum, as paradoxical as is its inventor

At 77, jack of many trades and arts and master of most of them, a fantasist now revels in his official recognition

In May of 1965, French President Charles de Gaulle was engaged in some of his Olympian electioneering in the *départements* southwest of Paris, where Normandy turns into Brittany. His program called for a brief halt at the undistinguished farm town of Cossé-le-Vivien. The ritual was the same as always: a speech, an exchange of good wishes and a local memento for the President. A gouache representing a black virgin was thrust into his hands, under his notoriously myopic eyes. Who was its creator? de Gaulle wondered aloud. Up stepped a stocky type with a great mane of white hair and brilliant brown eyes, dressed in a lumberjack's checkered woolen shirt.

"I assure you it will have a place of choice in my home," de Gaulle reputedly said. "What would you like in exchange?"

"To speak with Malraux!" Robert Tatin instantly shot back. (André Malraux was minister of culture.)

"D'accord," de Gaulle replied, perhaps a bit too easily. Little could he have suspected then that this bit of mechanical political bargaining was sowing an artistic whirlwind which would be reaped over the next few years by the communal, departmental and even national fine arts authorities. The harvest has

Tatin, a visionary who may deal in fantasies but who has precise ideas about the world, with wife Liseron and a figure called "The Beast Tamer."

Krysteline Grapotte, art student and live-in guide, in front of a section of Gate of the Sun, one of Tatin's most expansive constructions.

Photographs by Dmitri Kessel

been in for nearly a decade now: Robert Tatin, painter, poet, sculptor, philosopher, mason, carpenter and *provocateur,* has his own museum now, officially chartered by the Ministry of Culture and Environment and the Direction des Musées de France. He is not the only living artist to have reached this apotheosis (in Europe alone, Dali, Picasso, Miró and Chagall spring to mind), but he must surely be the only one to have built his with his own hands.

Tatin is utterly unclassifiable, as outrageous as he is confusing. Now 77 and married for the third time, he looks back over a splendidly baroque mosaic of careers and travels, from his birth in Laval (birthplace also of Alfred Jarry, avant-garde author, and Le Douanier Rousseau), where he studied some ("no less than two years," he boasts), worked as a carpenter, house painter and small-time pastry chef, to Paris, where he followed some desultory drawing classes, delivered coal, ran a bar and dabbled in ceramics. He enchanted Jean Dubuffet and André Breton (writer, theorist and founder of the Surrealist movement) with his *art brut* and his astonishing, antiacademic manipulations of the French language (words are objects, he maintains, and he takes them apart and then puts them together again in virtually unrecognizable form), to two short stints as a reluctant soldier. In 1938 he spent six months in New York, on 33rd Street near Penn Station, thinking about opening a bistro and assiduously not learning English. Then he wandered to South America, where he split his time between the gilt salons of rich collectors and the shacks of the indigenous Indians. Then back to the south of France and Paris once again, and finally to Cossé-le-Vivien, about ten miles south of where it all began.

It was here that he settled down in 1962. He was 60 years old, as passionately in love with life as he was with his 22-year-old bride, Liseron. He bought the ruins of an ancient farmhouse called La Frênouse, set to work rebuilding it (Liseron was his day laborer, cement mixer and cellar digger) and then . . . just kept going. Somewhere along the line, with neither intent nor clear planning ("put enough pebbles together and

Tatin's Way of the Giants, a pantheon of his heroes realized in his own fantasized way, includes (from the left) Picasso and Gauguin, each ornamented with the artist's private symbols. Below, the line of

you get a cathedral, don't you?"), his domiciliary reconstruction became an artistic statement and the artistic statement turned into his magnum opus. His museum is, by its nature, unfinished, but it already proffers a mind-boggling range of architectural ideas, statuary, ceramics and paintings—as well as an entire life's *Weltanschauung* of words, symbols and philosophical conclusions, scattered around where images struck him as insufficient to do the job.

Tatin himself, who is rarely at a loss for words, is unable to say precisely why he built his unlikely monument, or what he meant to express, beyond admitting that, yes, he wanted to leave something concrete behind (as good an explanation as any is that he probably wanted to show off to his young wife). It kept growing until both of them realized that it had expanded beyond the limits of their private enjoyment. Then the meeting with de Gaulle transpired.

Naturally, French centralism and bureaucracy being what it is (world champion, with the possible exception of the Soviet Union), nearly four years were to pass and masterpieces of foot dragging and obfuscation created between de Gaulle's *"d'accord"* and the official consecration of the museum. Through those years Tatin and Liseron got not to Malraux but to several of his deputies, tried the usual enraging labyrinth of administrative offices, met with and surmounted the customary blank stares and refusals, wrote letters, cabled and endlessly telephoned until the Louvre and the Direction des Musées consented to send a deputation of experts to Cossé-le-Vivien.

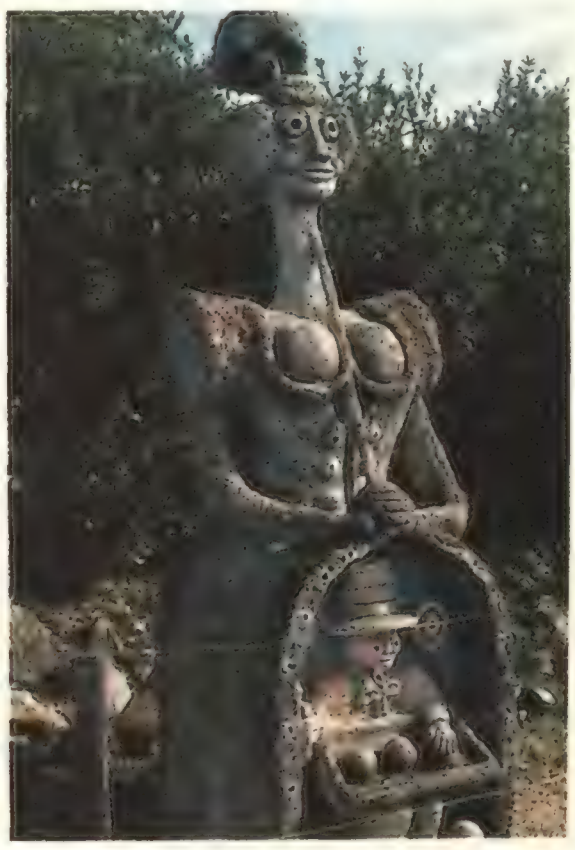
On January 1, 1969, La Frênouse officially changed its name to Le Musée Robert Tatin. The 12,000 or so visitors who troop through, over and into this creation every year—mostly on Sunday afternoons—often begin their tours with the respectful wariness owed to cathedrals, archaeological sites and other such milestones on the culture circuit, but within minutes they tend to display the most natural reactions of all: surprise, puzzlement, mirth. No one can quite tell how to grasp Tatin, but he is *fun*.

"No art critic takes me seriously," he says, and he wears the affront like a medal. "But the public does. This place is like a harbor, where everyone can find something that interests him—the priest, the communist, the royalist, the Red Brigader, the Japanese, the Jew, the Arab, anyone. I am for the marriage of paradoxes. Long live paradoxes!"

Tatin's monument has been variously compared to Assyrian, Aztec, Incan or Mayan architecture, and a relatively common tactic of clarification is to draw parallels between him and his fellow Lavallois, Jarry and Rousseau. Tatin himself enormously loves to spread confusion among the clarifiers, but he comes forward enough to reject the label of primitive, and he is probably right. There is too much thought and

A frequent SMITHSONIAN *contributor, the Paris-based author wrote about European bison (May 1978) and the national Pompidou art center (August 1977).*

totemic figures, some not yet finished, are (from right) Joan of Arc, three unfinished pieces, and (at far end) André Breton. Below, the French national hero Vercingetorix and painter Seurat.



The Gate of the Giants, surmounted by serpents derived from the caduceus, pays homage to

personal research, too much deliberate message mongering behind his work for this. The Jarry comparison is much more congenial. A man of enviable erudition and inexhaustible resources of provocation, Jarry remains the hero of French nonconformists today, even though he died, an indigent drunk (absinthe and ether at the end) in 1907, at the ripe old age of 33. Sometimes he carried a revolver. Once, while practicing with it in his garden, a neighbor lady complained that "he could have shot her baby." "So what?" Jarry retorted. "I'll make you another." He nearly always wore cyclist's clothes and traveled around on a beautiful racing bicycle which, by the way, he never paid for. He codified the absurd into a science of " 'Pataphysics," and created its greatest practitioner in the dramatis persona of Ubu, King of Poland. Tatin feels altogether at home in the company of Jarry.

"I don't give a goddamn about intelligence," he shouts. "What counts is lucidity. And I have some things to say."

He does indeed. A stream, a torrent, a Niagara of words flows forth as if from some sort of automatic machine as soon as he enters the combined bedroom-parlor-dining room of La Frênouse, dressed in the same shirt in which he confronted de Gaulle. He plunks himself down at the thick, sympathetically warped table built by his wife in the days before she became expert at wood seasoning and cabinetmaking, tucks into the steak which Liseron has grilled over the open hearth and which has been served up by Krysteline Grapotte (p. 111), the lovely young blonde from Nantes who has been his student and assistant for seven years, admits with pleasure that he has always been surrounded by women, deplores the fact that most people are misogynists these days (especially the women), then launches into three effortless hours of declamation about art, humanity and Tatin, unabashedly referring to himself the way de Gaulle did, in the third person. An interview with Tatin is like riding over the Andes in a Piper Cub.

If it were only hot air it would matter little, but the frustrating reality is that most of what the wild, wicked old man has to say is good and true, sometimes poetic and almost always funny. The witty, ironic, quicksilver tongue is a direct gift, as it turns out, from Papa. Among his several other occupations, Tatin's father was an ambulant peddler and pitchman with a portable lottery wheel, drawing crowds at markets and fairs by the sole magic of his patter and the distant —he made sure of that—chance of hitting a winning number. A quick sampling of Tatin's talk reveals only faint echoes of Tatin's machine-gun style, but it is enough to hint at the broad lines of his philosophy:

"No, I'm not very much known in France. I'm damned and maledicted because I am unable to repeat myself. I create all the time, and the French don't like that. So I'm a failure.

"I call art the means for surpassing yourself. It is a

five towering figures in world art history: Rembrandt, Van Gogh, Leonardo, Goya and Delacroix.

Tatin's Dragon represents evil, ego, selfishness and other trials before the arrival at redemption.

means for developing the marvels within us, for developing the dimension known as Man.

"I only regret that governments do not call on the artists of the world to help them. We would be able to give another dimension.

"If we are going to succeed as human beings, we will have to marry science with art. Economists don't understand anything about life, any more than specialists. I have a great fear of specialists.

"André Breton tried to get me to go to the Louvre and study the paintings. I prefer to charge my batteries by mixing with the people.

"What is real in life? Bread is real. And eating and sleeping and loving. What interests me is to live right now. People seem to have forgotten that.

"I suppose I'd like the museum to last for centuries, but, basically, that doesn't matter. If the Concorde fell on it, well, then, too bad. I enjoyed doing it. Doing is what I like best.

"It hurts me to see people, like Picasso at the end of his life, who take themselves seriously. The artist is a guy who doesn't stay put, who falls, gets up and then keeps on going. The man who makes mistakes should be venerated. You must accept to be a fool. But people don't, and so they are fools.

"The greatest lesson I ever received was from a Brazilian millionaire. I had begun to take myself seriously and do 'modern art.' 'I don't like that,' he said. 'I like Tatin when he's having fun.' What wisdom! What grandeur! It proved to me that it is possible to be a millionaire and not be a fool!"

And so on. Tatin's world view is summed up in the museum itself, of course, but most visitors come ill-prepared for the shock of it. The operative words which bring them to La Frênouse are *étrange* and *fantastique*, the two adjectives used on the signs in and around Cossé-le-Vivien to channel the curious his way. And then, turning right into a dead-end lane, a dozen or so yards past an odoriferous farm courtyard, they come upon an unlikely guard of honor: twin rows of painted concrete statues, beginning conventionally enough with Vercingetorix and Joan

of Arc (both p. 113), but then veering wildly into fancy with a sculptural version of the verb "to have", followed by some members of his personal pantheon: Le Douanier Rousseau and Jarry, Seurat (p. 113), Gauguin (p. 112), André Breton, the marionette Lafleur (northern cousin of Lyon's Guignol), Jules Verne and Picasso (p. 112). It requires a good dose of gall for an artist to conceive of taking on the verb "to have," but the idea is nothing compared to one of Tatin's grander schemes: "We could replace all the milestones between Paris and Nantes by statues like these. It would make employment for 100,000 men for five or six years. Well? The idea's no more absurd than the atomic bomb."

At the bottom of the lane, where the cows turn left to go to pasture, sandwiched between an apple orchard and a cornfield, is the structure of the museum itself, guarded on one flank by the figures of Rembrandt, Van Gogh, Leonardo, Goya and Delacroix (their faces vaguely reminiscent of the Roualt Christ), and on another by a crouching, gape-jawed dragon (p. 115), which looks like an armored toad saying "aah" to an old ear, nose and throat doctor. This curious beastie represents a number of things in Tatin's analogy-rich mind: the devil, egotism, material attachments, the renouncements and personal trials one must traverse before attaining self-knowledge and wisdom. And wisdom for him means balancing the prideful rationalism which has been in absolute domination of the Occident ever since the Renaissance ("this Renaissance which spat out the square"), by a return to the other side, the *sinistra,* the femaleness of instinct and creativity of which he feels modern Man is ashamed and afraid, and which he naturally enough symbolizes with a circle. Just to make sure that no one misses the point, he has stuck a dime-store statuette of the Virgin Mary deep within the dragon's mouth and has the creature holding onto a cube with one claw and a ball with the other. Tatin does not fear heavy nudges of the artistic elbow.

The museum, which butts up against the little Hansel-and-Gretel dwelling of La Frênouse, is composed of three basic parts, all of them heavily laden with the Taoistic-Masonic-pantheistic symbolism around which Tatin builds his mystique of life: the temple of Notre Dame Tout le Monde (Our Lady of the World), the Gate of the Sun and the Gate of the

The Gate of the Sun, center right, faces a Gate of the Moon (unseen). On left, dedicated to all fathers and mothers: Our Lady of the World.

Moon. The sun and the moon stand for the same male-female, reason-instinct, Yin-Yangery adumbrated on a lesser scale with the sore-throated dragon, but it is with the temple of Our Lady that Tatin has thrown himself the most thoroughly and lovingly into his passion for *sinistra*. It was at her feet and in her honor that he chose to dig (or, rather, have Liseron dig) the cross-shaped reflecting pond (see below) around which he spaced statuettes representing the months of the year, and where he testifies to his veneration with a chop-licking inscription at the base of the obelisk:

MMM
MERMÈRE
MERVEILLE

When Tatin writes "sea, mother, marvel," he naturally adds "yum yum" at the same time, because they sum up everything that he loves. Notre Dame Tout le Monde is the temple of his love for life.

Is it good art? Who knows? Who knows if it is even art at all? Officially, it must be something at least in the rough vicinity, because the Direction des Musées says so, but the temptation is strong to point to Robert Tatin as the real work of art at La Frênouse. The wild, wicked old man is still adding to the museum, and doesn't worry if he can't finish it all up before his death, because there will always be Liseron to continue with the plans he has laid down, and because there is no such thing as death, anyway.

"Death is just part of life," he shouts. "Vive la paradoxie! Vive la race!"

PONTIAC GRAND PRIX

YOU'LL FIND SOMETHING NEW TO LOVE EVERY TIME YOU DRIVE IT.

At first, it may be Grand Prix's beautiful, trim styling that captivates you the most. With its rich, formal roofline. And new cross-hatch grille.

The next time, it may be Grand Prix's luxurious interior that charms you. With its soft, available bucket seats. Its impressive roominess. And impressive quiet, due in part to special body mounts and door and body seals.

It's easy to fall in love with Grand Prix's road ability, too. There's a new freer breathing standard 3.8 litre (231-CID) V-6 that will amaze you with its response. Grand Prix is equipped with GM-built engines produced by various divisions. See your dealer for details.

It all makes Pontiac's new 1979 Grand Prix one very enchanting automobile to buy or lease.

And makes owning one a love affair . . . that never seems to end.

GM

MARK OF EXCELLENCE

THE 1979 PONTIACS OUR BEST GET BETTER

By Mary Louise Grossman

Ours was a world without flowers until 'just recently'

Darwin considered the evolution of flowering plants a mystery, but birds, insects, bats, reptiles clearly helped

A chuckwalla devours a brittlebush in the Mojave Desert and will inadvertently disperse its seeds. Some plants depend on such help from tortoises and even elk.

The first crocus heralds spring, and as the year advances, other flowering plants burst into bloom, each in its own season. Even if you live in a place where there is no winter, and spring comes on the heels of autumn, the procession of flowers is there to mark the change.

That this was not always so is a matter of geological record. Cone-bearing seed plants dominated the Earth until about 135 million years ago. Pollinated by the wind, conifers and cycads had no need for showy petals to attract pollinators. And their seeds were quite different from the often luscious fruits of flowering plants. Some of the Bennettitales (now extinct conifers) evolved hermaphroditic reproductive structures (the bisexual form of the earliest flowers) and quite likely experimented with insect pollination. But beetles proved to be the only pollen feeders around, and the ovules lying in the open cones near the pollen were also likely to be destroyed by their indiscriminate chewing. These pseudoflowers of 135 to 185 million years ago "bloomed" before their time, and eventually died out. It was the flowering plant with its ovules protected in an ovary that was to benefit from insect pollination.

The flowering plants even take their scientific name, angiosperm (angeon, meaning "cover," and sperma, "seed") from this fortunate development. How they arose, according to Charles Darwin, is a mystery. We have a link between fern and seed-fern, but no conclusive link between seed-fern and flowering plant. It is all bridged by probabilities. The cycads carried ovules on the edges or surfaces of fertile leaves. From such a reproductive leaf, an ovary or carpel (from the Greek *karpos,* fruit) may well have formed to enclose and protect the seeds.

Basically, the flower is a reduced cluster of highly specialized leaves at the end of a branch. The sepals are usually green and herbaceous; pollen-bearing stamens, in essence, are reduced from pollen-bearing leaves, and petals are supposed to be derived from stamens that lost their pollen-bearing sacs. At the heart of the flower, the carpel or ovary is a result of that reproductive leaf of the ancient cycad which first enclosed the ovules.

Just as the seed had given the conifer an advantage over the spore-bearing true fern, the carpel would be a tremendous evolutionary breakthrough. It marked in many cases a transition from the vagaries of the wind to the constancy of insect visitors: at first, only the beetles of the Jurassic—but later, all the most clever and lovely types of butterflies and bees. And with that security of pollinating relationships, old and new, the flowering plants came into their own. Today the species of angiosperms outnumber the combined total of mosses, ferns and gymnosperms (conifers and cycads) by six to one. They are of the same rich diversity that created the worldwide tropical forests of the Cenozoic Era, a richness now reduced both by climatic and geological change and by the weed introduction and deforestation that accompany human activity.

True enough, some of the advanced angiosperms have reverted to the ways of the cycads and are wind-pollinated. Among them are grasses, sedges, sagebrushes and a number of trees—all of which grow in great communities of their own kind. But they still have flowers, albeit rudimentary and inconspicuous. The fossil record implies that the spectacular radiation of flowering plant species over the surface of the Earth is the result of coevolution with animal pollinators. The open cups of primitive magnolias and buttercups offered pollen to beetles; since then the shape of many nectar-producing flowers has become as specialized as the mouths of the insects that feed on them.

In flowers pollinated by the long-tongued insects, the petals are often fused into a tube or nectary, with the nectar concealed at its base. The tubular structure tends to screen out the beetles and small, short-tongued flies, and restrict visitors to those more discerning insects which fly regularly from flower to flower of the same species. With their incredible "flower memory" and constant visiting

Mary Louise Grossman, now a resident of Santa Fe, is at work on a book on the evolution of the flowering plants.

Photographs by Shelly Grossman

FREE

new catalogue
of the only
authorized
reproductions

TREASURES OF TUTANKHAMUN

48 pages in full color illustrate precise copies and adaptations of the unmatched royal treasure which lay hidden in Egypt's Valley of the Kings for thirty-three hundred years:

- Golden rings inscribed with Tutankhamun's name; necklaces; sculptured pendants in the form of lotus flowers, magic udjat eyes, winged goddesses, and royal falcons; brooches; bracelets; earrings; amulets and charms.
- These are the only authorized reproductions produced in conjunction with the Tutankhamun exhibition now in the United States. Many are made from precision molds taken directly from the originals—an unprecedented achievement by the craftsmen of the Metropolitan Museum who were sent to Egypt for that specific purpose.
- The copies are available *only* at the exhibition of *The Treasures of Tutankhamun* itself or by mail from The Metropolitan Museum of Art. Prices range from less than $5.00 to $2,000.

You are invited to send for your free copy of the catalogue now.

THE METROPOLITAN MUSEUM OF ART
255 Gracie Station, New York, New York 10028 IDB9

☐ Please send me my FREE copy of the illustrated catalogue of the Treasures of Tutankhamun.

☐ Please send me my FREE copy of the above catalogue. Also, please send me the new catalogues of Museum jewelry, sculpture, glass, porcelain, silver, pewter and other decorative arts reproductions as they are issued in 1979. Enclosed is $1.00 to defray mailing costs.

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

One of the first pollinators, a beetle, eats buttercup petals in southern Spain.

habits, the social bees are particularly effective explorers of floral anatomy. In their exhaustive study of the New World phlox family, Verne and Karen Grant found bee-pollinated flowers most prevalent—possibly ancestral to all others now catering to insects with longer tongues and to the birds and bats. When the flower's specialization reaches the point of exclusiveness, a new species may form, reproductively isolated from the old one. This may also partially account for the great variety of species in the orchid and other highly specialized families of flowering plants.

"Nature abhors perpetual self-fertilization." In 1882, Charles Darwin repeated and elaborated on his own dictum: "If the word perpetual had been omitted, the aphorism would have been false. As it stands, I believe it is true, though perhaps too strongly expressed." Darwin's ideas resulted from an experiment with two large beds of self-fertilized and cross-pollinated seedlings derived from the same plant of *Linaria vulgaris*, which we call "butter-and-eggs." To his surprise, the crossed plants turned out to be taller and stronger.

More than 80 years before Darwin's work on the cross-pollination of plants, an amateur botanist in Germany had observed the same phenomenon in other species. In *Das Entdeckte Geheimniss der Natur*, "The secret of nature revealed," Christian Konrad Sprengel made obser-

How a phone call solved the mystery of the sandy teacups.

Based on an actual call made to the toll-free 24-hour Whirlpool Cool-Line® service.

(Telephone Rings)

Cool-Line Consultant: Whirlpool Cool-Line. May I help you?

Woman: I just bought a Whirlpool dishwasher and I keep finding sand in my teacups. Can you help me?

Consultant: That's why I'm here. Now, about the sand. Are the rest of your dishes clean?

Woman: They're fine. My husband's a Mexican food freak. Even pans with baked-on refried beans get clean. But where did the sand come from?

Consultant: What does the sand look like?

Woman: Like...sand. In a puddle of water that didn't drain out of the teacup.

Consultant: If you're seeing "sand," it could be your dishwasher detergent hasn't dissolved. Do you have a cup with some "sand" in it now?

Woman: Right here by the phone.

Consultant: Does the "sand" look like detergent?

Woman: You mean this is detergent?!?

Consultant: Look closer.

Woman: It does look like detergent. So why didn't it dissolve?

Consultant: Check your water temperature. At your dishwasher, it should be at least 140°. If it's okay, then I suggest you buy a fresh box of detergent. Dishwasher detergent sometimes has a very short shelf life and doesn't dissolve completely when it's old. And make sure you load your teacups properly, so all the water drains out.

Woman: Wow. You really helped. Sorry I bothered you, but at least I didn't have to call a repairman. Thanks for your time.

Consultant: Glad I could help.

This is the kind of two-way communication we've been having with our Whirlpool Cool-Line service for the past eleven years. It's just one example of the continuing concern we have for customers who purchase quality Whirlpool appliances.

If you ever have a question or problem with your Whirlpool appliance, call our toll-free 24-hour Cool-Line service at 800-253-1301. In Alaska and Hawaii, dial 800-253-1121. In Michigan, call 800-632-2243. If our Cool-Line service can't help, we have Whirlpool franchised Tech-Care® service representatives all over the country who can.

Whirlpool
Home Appliances
Quality. Our way of life.

QUESTERS WORLD OF NATURE TOURS

"Nature tour" has a special meaning when you travel with Questers. We are the *only* professional travel company specializing exclusively in nature tours.

Our approach in planning Worldwide Nature Tours is to provide you with the broadest possible opportunity of experiencing for yourself the natural history and culture of each area we explore. With the leadership of an accompanying naturalist, we search out the plants and animals, birds and flowers . . . rain forests, mountains, and tundra . . . seashore, lakes, and swamps of the regions we visit. We also study the architecture, archaeology, museum collections, temples, and customs of the people.

The current Directory of Worldwide Nature Tours describes 29 tours varying in length from 9 to 36 days and going to virtually every part of the world. Included are Mexico, Peru, Hawaii, Alaska, Ladakh, Sri Lanka, Galapagos, Patagonia, Iceland, Scotland, and Switzerland. Tour parties are small, the pace leisurely, and itineraries unusual.

Call or write Questers or see your Travel Agent *today* for your free copy of the Directory of Worldwide Nature Tours.

Questers Tours
AND TRAVEL, INC.
DEPT. SM-279, 257 PARK AVENUE SO.
NEW YORK, N.Y. 10010 / (212) 673-3120

Who says the shortest distance between two points has to be a straight line?

Install your own spiral stairs!

Handsome and dramatic.
Space-saving and rugged.
Complete instructions included.
No special skills or tools needed.
Stock kits cost as little as
$295.00
Send for brochure:
Mylen Industries
650 G Washington Street, Peekskill, N.Y. 10566
(914) 739-8486; (212) 585-6767
Design services available
Showroom: Daily 9-5, Thur. 'til 9, Sat. 'til 2.

A newly opened hollyhock shows male stamens, with pollen-laden anthers.

Later, the female parts are exposed and the flower is ready to be pollinated.

vations about irises, the day lily and the fireweed which seemed to indicate that "no flower shall be fertilized by means of its own pollen." He was the first to point out that the color patterns of flowers are not there to please us, but to attract insects and guide them to the source of the nectar or pollen. It is to Darwin's credit that he always acknowledged his predecessor, even though unaware of Sprengel's obscure book until years after his own corroborating discoveries. The adaptations of flowers for cross-fertilization preoccupied Charles Darwin for a great part of his career; he never ceased to wonder about their "endless beautiful contrivances." Nor did he overlook the fact that flowering plants exercise many options. Some, like violets, produce both normal and closed buds, which never open and obviously fertilize themselves (SMITHSONIAN, March 1978). Sundews in northern European bogs—where bees are scarce—also take the alternative of self-fertilization. Dandelions, opening in the early spring before insects appear, are almost completely asexual (p. 124). You can see this for yourself by cutting off the stamens and pistils just before flowering. The head will set good fruit anyway. To allow for genetic variability, a very occasional generation is cross-pollinated.

Who would have been more intrigued —Darwin or Sprengel—by the discoveries of Karl von Frisch, a pioneer in the study of the color vision of bees? We have only recently found out that bees and wasps (some butterflies and moths, too) are color-blind to red and sensitive to a visual world that human beings cannot experience. The bee sees a red poppy at ultraviolet wavelengths. Are you curious about yellow? The marsh marigold, apparently uniform in color, is marked with ultraviolet nectar guides. These colors and contrasting patterns can only be seen by us with the aid of an ultraviolet filter on a camera lens (p. 129).

The distinctive odors of flowers are no more accidental than their shapes and colors. These, too, attract and guide insects. Certain odors bring in "scout bees," which communicate their findings to others in the hive by carrying with them the special scent of a food source just visited. Poppies direct bees to pollen by color and scent guidelines. And flowers that might otherwise be unattractive give off fetid smells irresistible to flies—the Arum actually traps the insects until they are thoroughly covered with pollen (SMITHSONIAN, April 1978). We are only beginning to learn about the sophisticated scent signals in the orchid family. Most species exude several distinctive fragrances, and sometimes the scent is directed exclusively to hawkmoths or long-tongued flies.

While some "bee flowers" have switched to different insect pollinators,

The diamond solitaire.

A rare gift.

A 1.25 carat diamond. Set simply and elegantly.
To sparkle on its own. Of lasting value,
because diamonds of about 1 carat and up are rare.
(The one shown here is worth about $4,500.)
The diamond solitaire.
It is the gift that makes a rare and beautiful
moment last a lifetime.

A diamond is forever.

The 1.25 carat diamond shown is enlarged for detail. De Beers.

WITHIN 2 OR 3 YEARS OF RETIREMENT?

ENJOY an Arizona Vacation in a lovely apartment in

Sun City West

STANDARD OF THE WORLD IN RESORT-RETIREMENT LIVING

A FABULOUS RESORT VACATION FOR ONE OR TWO PEOPLE JUST $150 *

Golf, tennis, swimming and special parties are just a few of the things you'll be invited to enjoy. Plus you'll stay in a beautiful air conditioned apartment with a completely equipped kitchen, color TV, attached carport and private patio. Just 15 miles from exciting Phoenix. Easy drive to the Grand Canyon, Mexico or Las Vegas.

*INTRODUCTORY RATE:
For 1 week: Jan. 1, 1979-May 31, 1979
For 2 weeks: June 1, 1979-Oct. 16, 1979
Rates subject to change without notice

MAIL THIS COUPON TODAY!

DEL E. WEBB DEVELOPMENT CO. DEPT. SMI-29
P.O. BOX 1725, SUN CITY, ARIZONA 85372

Send all details on the $150 Vacation Special plus full-color brochure to:

Name_____

Address_____

City_____ State_____ Zip_____

*One guest to be 50 or over, none under 18. Reservations limited to available dates. Return visit Rate: $200
13601 Meeker Blvd., Sun City West, AZ
Equal Housing Opportunity Employer
Sun City West is not a lot sales development

Everyone's traditional favorite is Robert Scott's classic crewneck sweater made of imported Shetland wool. Sizes 34-40. Emerald, cream, navy, grass, hot pink, bluebell, heather blue, pink, red or yellow. $28. Monogram in white, navy, red, brown, green or cream. $6.
(Please underline last initial.)
Add $2.25 for postage. Order by mail, or phone 617-749-7830. Master Charge, Visa or American Express accepted.

Send for our free catalog of classic women's and men's fashions.

The Talbots

Dept. LQ, Hingham, Massachusetts, 02043
10 stores in Massachusetts and Connecticut

AN INVITATION TO JOIN OUR 100-PASSENGER CRUISELINERS WORKING THEIR WAY AROUND SOUTH AMERICA.

Twenty-two times a year our luxurious American Flag Cruiseliners sail from the West Coast to South America with 100 pampered passengers and exotic cargoes. Full cruises last approximately 54 days. For details, see your Travel Agent, or send for our colorful Cruise Brochure.

S279

RSVP Delta Line Cruises
Delta Steamship Lines, Inc.
One Market Plaza
San Francisco, California 94106 • (415) 777-8300

Name_____

Street_____

City_____

State_____

Zip_____

Delta Line Cruises

others are now oriented toward nectar-feeding birds—bigger, hungrier creatures, whose sense of smell is minimal and whose color vision compares with Man's. For songbirds, perfume is apparently inconsequential and an orange or red flower is often more attractive than any other. The most vital adaptations are structural and quantitative. To attract a sunbird or honey-eater, the blossom must be large and brimming with delicious nectar—and provide a perching place. But for the tiny, hovering hummingbird a delicate, pendulous blossom will do. The length and sometimes the curvature of a floral tube may match the bird's beak within millimeters. Long stamens may reach out to touch its feathers with sticky threads of pollen in very specific places. The ruby-throated hummingbird carries these on the feathers at the corners of its mouth; other species, on the forehead.

The nocturnal counterpart of the bird flower is the bat flower, prevalent only in tropical regions populated by the long-tongued and other nectar-feeding bats. These pollinators visit baobabs and other plants whose flowers differ from bird-pollinated flowers in their brownish colors, wide, exposed throats (to afford entrance), evening opening time and rot-

The dandelion has a bright flower, but usually reproduces without pollination.

Not a bee, this is an orchid flower disguised as a bee to attract pollinators.

ten odors, apparently attractive to bats.

Although birds and bats may be more important pollinators than insects in many parts of the tropics and the Southern Hemisphere, their associations with flowering plants are not nearly as widespread—after all, the insects have an evolutionary advantage, amounting to a head start on the geological time scale of some 135 million years.

When pollinating relationships were just beginning, the angiosperms also had to evolve some means of seed dispersal. One development followed on the other, for the ovary wall—a protective advantage in the flowering stage—becomes an obstacle to seed dispersal in the fruiting stage; the mature seeds, inside their prison, must find some means of escape.

Dehiscence, or splitting open of the fruit, and the use of the wind for distribution evolved as a solution to the problem. The most primitive fruits are pods, which split open to release a few seeds. Pistils at the center of the marsh marigold develop into this kind of pod. The bean, a fruit composed of one carpel with many seeds inside, releases them by splitting along the ribs. In the case of a compound pistil, the carpels develop as one unit until the seeds ripen; then, they separate and burst. A few members of the Old World chocolate family still go about this in a rather antiquated fashion. The carpels, five in a flower, become green and baggy after pollination and soon open to expose the immature seeds, which continue to grow out in the open for several weeks. Then the carpels dry up, separate from the fruit stalk, and parachute the seeds to the ground.

Picture perfect.

Simple, romantic beauty. Stately charm. Sand dunes. And rugged mountain trails. Put it all together and you've got great material for a scrapbook on your Georgia vacation. Write today for our colorful, free vacation guide. And when you reach Georgia, stop at one of our Visitor Centers for the latest information and directions.

Dept. SS-92
Georgia Department of Industry & Trade
Tourist Division, P.O. Box 1776
Atlanta, Georgia 30301

Please send me your free vacation guide so I can start my own Georgia scrapbook.

Name

Address

City, State, Zip

Georgia

Wherever you intend to build

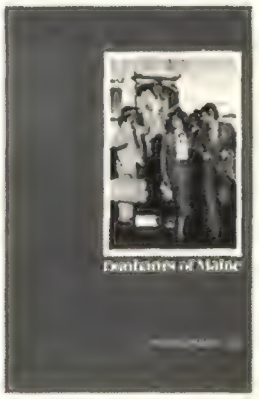
Twenty years of experience in creating custom, energy-efficient houses have enabled us to perfect our unique and dynamic approach to architecture. . . a careful blend of design, precision engineering and on-site construction.

Your ideas, combined with our exacting workmanship and fine materials will result in an impressive contemporary classic built on your site anywhere in the country.

For a brochure containing over 50 plans, send $7 to Deck House, Dept. E-4, 930 Main Street, Acton, MA 01720. For locations of Model House/Sales Offices call (617) 259-9450.

DECK HOUSE

Yours Free for the Asking.



Consistently creating an exclusive image since 1887, Dunham's of Maine combines classic fashion designs with the finest of natural fabrics to create its 1979 Spring/Summer Collection of men's and women's clothing and accessories. Our 32 page full color catalog is yours free, just write us or call (207) 873-6165.

Start to experience the quality and attention to detail that comes with 92 years of clothing excellence.

Name_____
Address_____
City_____
State_____ Zip_____

Dunham's of Maine
30 Castonguay Square
Waterville, Maine 04901

"Renewed hope, greater freedom, and more brotherhood than ever before"

That's a valid description of Western Europe today, writes Geoffrey Godsell, senior roving correspondent for The Christian Science Monitor. In an eye-opening five-part series he reminded readers of Churchill's remedy for World War II's devastation — "to re-create the European family." And he told how it's being done; how the barriers (whether physical, economic, or mental) are coming down among these countries and where new ones could spring up.

Godsell's done the same perceptive evaluation for Canada... and Italy... and Japan... and who knows where he'll turn up next? Wherever he goes, his goal is to enable Monitor readers to see and understand other people of the world, as those people understand and see themselves.

Find out for yourself how exceptionally well he succeeds and receive a bonus — a FREE Rand McNally World Wall Map — for trying an introductory 13-week subscription to the Monitor. Just $13. Simply call toll free 1-800-225-7090 (in Mass., call collect 617-262-2300) and mention the Smithsonian when you request your map. Or write: The Christian Science Monitor, Box 125, Astor Station, Boston, MA, U.S.A. 02123.

THE CHRISTIAN SCIENCE MONITOR®

A nectar-seeking hummingbird hovers beside an agave flower in California.

E. J. H. Corner, former professor of tropical botany at Cambridge University, has proposed that the relationship between flowers and animals first arose in connection with fruit dispersal rather than the development of ovaries to protect ovules from pollinating—and chewing—beetles. He has traced the coevolution of fruits and their animal distributors back to the Cretaceous forests through the strange durian tree and its relatives throughout Malaysia. This tree, with massive stems and big leaves, produces a huge flower worthy of the grand scale of its construction. The flowers turn into equally massive fruits that are at first covered with spikes, to avoid being eaten while green. Later on, the fruits ripen to a greenish-yellow or light-orange color and split it into five segments, each having pendant black seeds partly coated with fleshy red appendages called arils. The fruit itself exudes the smell of coal gas, and the aril, which has no odor, tastes like a concoction from an ice-cream parlor. When the ripe fruits fall to the ground, the stench brings in nearly every animal in the rain forest. The seeds they discard begin to grow at once, establishing seedlings in the general vicinity of the parent trees.

According to the durian theory, "from such arillate fruits all other kinds have been derived by the loss of the aril, by drying up into the rattling pod or capsule with its dry seeds, by indehiscence leading to the general succulence of berries, by increasing lignification leading to stone fruits and nuts, and by decreasing size, leading to small editions of all these

Authentic MUSEUM REPLICAS

from museums and private collections around the world

SCULPTURE
JEWELRY

Pre-Columbian, African, Oriental, Egyptian, Classical and Contemporary works of art.

Send $1 for full-color catalog of 6000 years of art

MUSEUM COLLECTIONS

Dept. SM-2, P.O. Box 7000
Greenwich, Connecticut 06830

solid brass knocker!

Proud symbol of Britannia, and of the famous door at 10 Downing Street. Dramatic for YOUR door, superbly hand-cast of solid brass, over 1½ pounds in weight. The Peerage name assures matchless quality—it's handsomely antiqued, polished, and has a tarnish-free finish that will endure. Our own English import, 8¼" long, complete with screws and striker plate.
545 Lion Door Knocker $22.98

Add $1.50 post. & hdlg. NY res. add taxes. Master Charge or Visa: send card number, exp. date, Master Charge Interbank number

LILLIAN VERNON®

Dept. T23, 510 S. Fulton Ave., Mt. Vernon, NY 10550

From the conquests of the ancient Assyrians...
to the growth of the American Republic—all in the

Library of World History

Take any 3 books for only $1.00 each

(values to $75.00)

if you will join now for a trial period and agree to take 3 more books—at handsome discounts—over the next 12 months

62647. THE MIDNIGHT WAR. *Richard Goldhurst.* The story of the bloody and forgotten war fought by thousands of American troops on Russia's eastern front at the end of World War I. **$14.95**

48665. FLORENCE IN THE FORGOTTEN CENTURIES. *Eric Cochrane.* The lives of six talented men tell the story of Florence from the heroic siege of 1530 to the Risorgimento. **$16.50**

67760-2. PEOPLE OF THE FIRST MAN. *Thomas and Ronnefeldt. Watercolors by Kurt Bodmer.* Life among the Plains Indians in their final days of glory. *Counts as 2 of your 3 books.* **$30.00**

62895. MONTAILLOU. *Le Roy Ladurie.* Portrait of medieval life: the passions, hopes and dreams, torments, superstitions, poverty and sexual intrigues of a remote people. **$20.00**

50595. THE GREAT EXPLORERS. *Samuel Eliot Morison.* From the Cabots to Verrazzano to the three greatest navigators in history—Columbus, Drake, and Magellan. **$17.95**

53055. A HISTORY OF AFRICA. *J.D. Fage.* **$17.95**

61610. MAYA. *Charles Gallenkamp.* The rise of Mayan civilication and its march to extinction. **$12.95**

78255-2. THE SHORTER CAMBRIDGE MEDIEVAL HISTORY. *C.W. Previte-Orton.* Two-volume edition of *the* standard work of this period. 1200 pages, 300 photographs. *Counts as 2 of your 3 books.* **$49.50**

63340-2. MYSTERIES OF THE PAST. Beautifully illustrated volume explores the riddles of past civilizations. *Counts as 2 of your 3 books.* **$34.95**

74300-2. ROME AND HER EMPIRE. *Barry Cunliffe.* A magnificently illustrated volume that makes the history of one of the world's greatest civilizations come alive. *Counts as 2 of your 3 books.* **$50.00**

34415. ARNOLD TOYNBEE: A Selection from His Works. *Edited by E.W.F. Tomlin.* **$14.95**

87890-2. WORLD PREHISTORY IN NEW PERSPECTIVE. *Grahame Clark.* Tour of man's pivotal rise from the stone age to the dawn of civilization. *Counts as 2 of your 3 books.* **$29.95**

66400. THE ORIGINS OF THE SECOND WORLD WAR. *Maurice Baumont.* Probes and exposes the foibles, frailties, and confusions of the world's leaders that ultimately led to the holocaust. **$22.00**

47801. THE FACE OF BATTLE/THE WARS OF THE ROSES. Chilling view of what war was like for the soldier of Agincourt, Waterloo and Somme. *Plus* an enthralling panorama of the famous war between the houses of Lancaster and York. **$23.45**

41075. THE CRIME AND PUNISHMENT OF I.G. FARBEN. *Joseph Borkin.* The startling account of the unholy alliance of Adolph Hitler and Germany's great chemical combine. **$10.95**

74305. ROMAN BRITAIN. *H.H. Scullard.* Classical scholarship combined with the latest archaeological discoveries to present a vivid portrait of life in Britain under Roman rule. **$14.95**

37398. CELTIC CIVILIZATION. *J. Markale.* The 2,000-year epic story of the civilization that rivaled Greece and Rome for richness, diversity and power. **$24.95**

54995. THE ILLUSTRATED ENCYCLOPEDIA OF ARCHAEOLOGY. *Glyn Daniel.* **$17.95**

40825. THE COURTS OF EUROPE. *A.G. Dickens.* The meaning and influence of the four centuries of royalty. Includes 342 glorious photographs. **$24.95**

57845. THE LAST DAYS OF IMPERIAL RUSSIA: 1910-1917. *Miriam Kochan.* **$15.95**

50273. THE GERMAN ARMY: 1933-1945. *Matthew Cooper.* How the German Army could have begun the war with such resounding conquests only to be so quickly defeated. **$17.95**

60555-2. MARITIME ARCHAEOLOGY. *Keith Muckelroy.* The ancient secrets of the ocean depths revealed by today's archaeologists. *Counts as 2 of your 3 books.* **$37.50**

55075. IMPERIAL NOMADS. *Luc Kwanten.* The Mongol hordes came and conquered most of the world. **$25.00**

41440. DAILY LIFE IN THE WORLD OF CHARLEMAGNE. The hopes, fears, prejudices, beliefs, social structure and pitiless routine of life in the vastness of Charlemagne's empire during the middle ages. **$22.00**

58575. LIFE IN THE ENGLISH COUNTRY HOUSE. A Social and Architectural History. *Mark Girouard.* Marvelously illustrated. **$25.00**

40805. THE COURSE OF MEXICAN HISTORY. *Meyer and Sherman.* **$25.00**

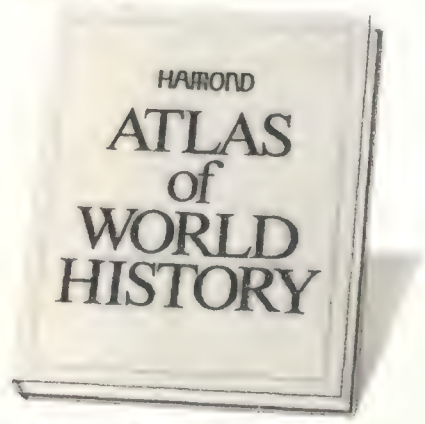
34397. ARCHAEOLOGICAL HISTORY OF THE ANCIENT MIDDLE EAST. *Jack Finegan.* A history of the Middle East from the beginning of civilization to 330 B.C. Nearly 100 photographs. **$25.00**

44870. ENCYCLOPEDIA OF CHINA TODAY. *Fredric M. Kaplan, et al.* Overview of the current structure and workings of Chinese society. **$25.00**

37345. CATHERINE: EMPRESS OF ALL THE RUSSIAS. *Vincent Cronin.* **$12.95**

(Publishers' Prices shown)

Yours FREE—for joining now!



9½" by 13½" hardcover atlas featuring over 100 maps illustrating the most significant periods and events in history.

If the reply card has been removed, please write to
Library of World History
Dept. J-A3E, Riverside, N.J. 08370
to obtain membership information and application.

Genuine Cast Iron Piggy Bank!

ONE FOOT LONG. WEIGHS 6 LBS.

Cast in Authentic 100 Year Old Antique Molds

YOU MUST BE SATISFIED!

The best merchandise at a low price delivered in a hurry... that's real VALUE. You must be delighted with your purchase *always*, or we'll refund your money FAST! . . . no questions asked. We guarantee it . . . in writing!

Here's the heavyweight savings champion of the century . . . a ponderous porker you can really bank on to increase your wealth. This genuine cast iron piggy bank is made in authentic 100 year old antique foundry molds. Friendly faced sow is a huge one foot long from her routing snout to curly tail (Any bigger she'd have to be in the barnyard!) . . . weighs a hefty 6 lbs. Extra-large interior holds over $1,000 in assorted coins when full. (Imagine what you could buy with that!) Fills up quicker than you think. An impressive and fun way to teach kids the importance of saving. A superb decorator piece that doubles as a super-doorstop! Durable materials and beautiful craftsmanship make it a lasting heirloom to be handed down through generations. Order now for quick delivery.

Piggy Bank (Z610386) ..... **Only $19.95**
SAVE MORE! 2 Banks (Make great bookends) ..... **Only $38.00**

SATISFACTION GUARANTEED . . . ORDER NOW!

New Hampton General Store, Dept. BZ-7677
340 Poplar Street, Hanover, PA 17331

Please rush ____ genuine cast iron Piggy Bank(s) **(Z610386)** for the low, direct-to-consumer price of only **$19.95** plus $2.75 heavyweight shipping and handling on Full MONEY BACK GUARANTEE.

☐ **SAVE!** Order TWO (one as a super-gift), just **$38.00** plus $4.95 postage and handling.

Enclosed is $_____ (PA residents add sales tax)

CHARGE IT:
☐ American Express ☐ Diners Club
☐ VISA/BankAmericard ☐ Carte Blanche
☐ Master Charge Interbank No. _____
Acc't No._____ Exp. Date_____

NAME_____
(please print)
ADDRESS_____
CITY_____
STATE_____ ZIP_____

☐ Check here and send 50¢ for year's subscription to our full-color catalog of exciting gifts. (Z618314X)

© New Hampton General Store 1978

BIG WINTER SAVINGS NOW

smart boating without high cost or constant expense. No need for 'big rig' burdens. Go when and where you please, efficiently and carefree with your compact and fabulous

FOLBOT for YOUR *Sport and Family Recreation.*

fits in every home or car

America's foremost small Craft in many styles and sizes from 1 to 4 seaters, provide smoother, faster ride with 1 to 10 HP motors, Yacht-smart sails or lightweight paddles; available either FOLDING or rigid PORTABLE in prefabricated Kits or Factory Finished in all colors and brilliant Deluxe, or subdued camouflage.

NEW Smart speedline Kayaks
JUNIOR Prefab $117.
JIFFY $152.

CAYAT
16 feet long
Basic Kit from **$49**
YACHT-SMART SAILING
Large Dacron Sailrig, $185

In 4 Winter evenings or 2 Rainy days, complete the **Fabulous Glider** from Easy Prefab at $168. NOW!

ACTION color CATALOG FACTS & FIGURES FREE
Mail coupon or address to:
Folbot Corp., S279 Charleston, S. C. 29405

NAME _____
ADDRESS _____
CITY _____
STATE ZIP

The flower of marsh marigold appears plain yellow to the unaided human eye.

kinds." Among them, the indehiscent fruits, which do not split open—including such diverse types as acorns, cherries and dandelion seeds—are the most apt at exploiting ways of disseminating themselves by wind, water or animals.

While beetles were pollinating the flowers of the ancient forests, some reptiles fed on the fallen fruit. If their habits were anything like those of turtles and lizards that are vegetarians today, they swallowed everything reachable and palatable—foliage, flowers, fruits and seeds. Thus the seeds had an edible portion and a hard, dry coating, tough enough to go through a digestive system without being destroyed. The seeds would germinate in the dung (or become fossilized in the coprolites discovered by paleontologists). In the Galápagos Islands, huge land tortoises still spread cactus and wild tomatoes along their trails. In fact, seeds of the local tomatoes are more likely to germinate when they are passed through the alimentary tract of the reptiles.

Among the small, dry seeds that travel with birds are those of water plantain carried on the feet of migratory ducks and geese. Darwin once grew a whole garden from seeds in the mud taken from the feet of waterfowl. In this way, islands are colonized by certain plants growing in marshes thousands of miles away. Forests are maintained for centuries with the aid of birds and mammals; squirrels bury nuts and often forget to claim them, and jays, too, cache and carry. Large oaks do

But in ultraviolet (above), insects see directions to the nectar boldly marked.

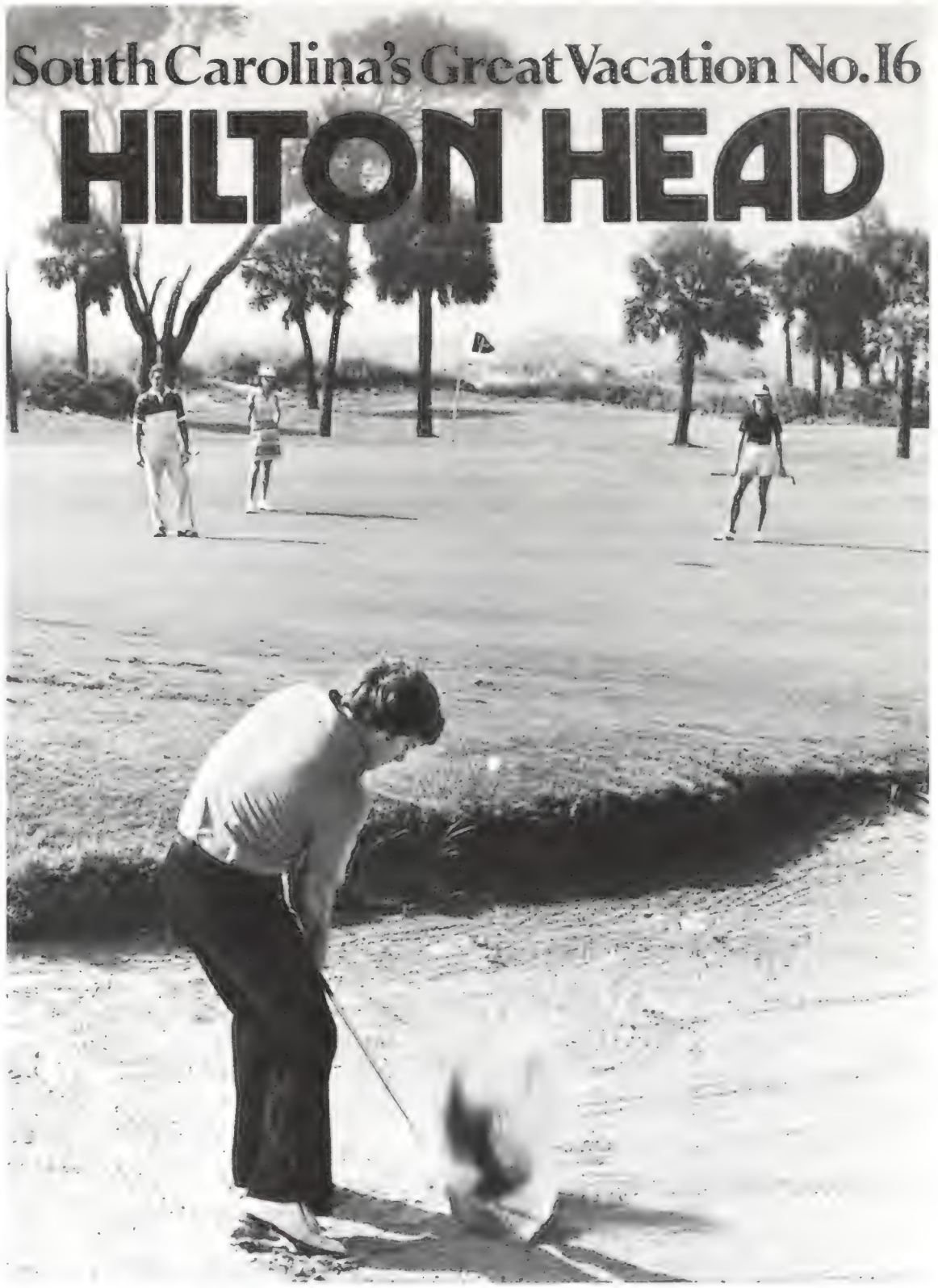
not from acorns grow without burial, because the nuts of deciduous trees absorb water with difficulty, and need a dark, moist place for germination.

Through the millennia, other seeds have become adapted to being carried by flood down rocky river beds, or to open under trial by fire. To these purely mechanical means of nut cracking, the large hoofed mammals have added their influence by trampling seeds into the ground, or chewing them up along with leaves and fruit.

To avoid being destroyed by the teeth and digestive juices of the grazers, seeds must be hard, smooth and have a tough, resistant coat. In juicy fruits, they are often bitter, in contrast to the sweet taste of the pulp. This is the way of the scrub forests on the East African savanna: here, the antelopes follow the greening of the grass and fruiting of the trees. Some eat more fruits than others. The gemsbock and the eland are among those that savor the pulpy "monkey bread" of the baobab and the leathery, protein-rich pods of the acacias. From the dung along antelope trails, new islands of these trees and shrubs arise.

In the Southwestern United States, the seed of the mesquite is similarly dispersed by ruminants browsing on the sweet, edible pods.

Even within a single species of wild hooved mammals, individuals of different sexes and ages are selective in their diets. Much of this is due to the social organization of the herd. Among elk and deer the



Taste all the island delights this year.

You know Hilton Head Island as the home of the Heritage Golf Classic and the World Tennis Invitational. But other creatures as well as pros thrive here. Deer and egret roam a setting whose beauty ranges from the subtle to the spectacular, all rimmed by pristine ocean beach. Nowhere on earth is there a more civilized wilderness.

Enjoy boating, riding, golf and tennis with the stars of the game, on Hilton Head or its neighbor islands—Fripp, Edisto, Seabrook, Kiawah. You will notice here an uncommon attention to comfort that some people call luxury. Come this year. And taste its delights.

Send for your FREE South Carolina Trip Kit

Name _____

Address _____

City _____

State _____ Zip _____

South Carolina Division of Tourism, Room 676, Box 78, Columbia, S.C. 29202

Send for our 48 page full-color "Catalogue & Price Guide of Collectors' Paperweights" $3.

Antique & Contemporary

Paperweights

L.H.Selman, Ltd. paperweight specialists

761 Chestnut St., Suite 14C, Santa Cruz CA. 95060

See the White House this weekend.

From the Sheraton-Carlton.

We invite you to enjoy our Washington Weekend in European style. Just two blocks from the White House. On arrival Friday evening, you will be served champagne and cheese in your room or suite. Enjoy a lavish breakfast Saturday morning. And our traditional Carlton Champagne Brunch on Sunday morning. Our 3-day/2-night weekend of luxury is only $110 a couple, plus taxes. A suite is just $20 more. Ask about the special welcome for Smithsonian members. For reservations, call toll-free 800-325-3535 or (202) 638-2626 in Washington. Reservations must be made in advance.

The Sheraton-Carlton

SHERATON HOTELS AND INNS, WORLDWIDE

923 SIXTEENTH STREET, N.W., WASHINGTON, D.C. 20006

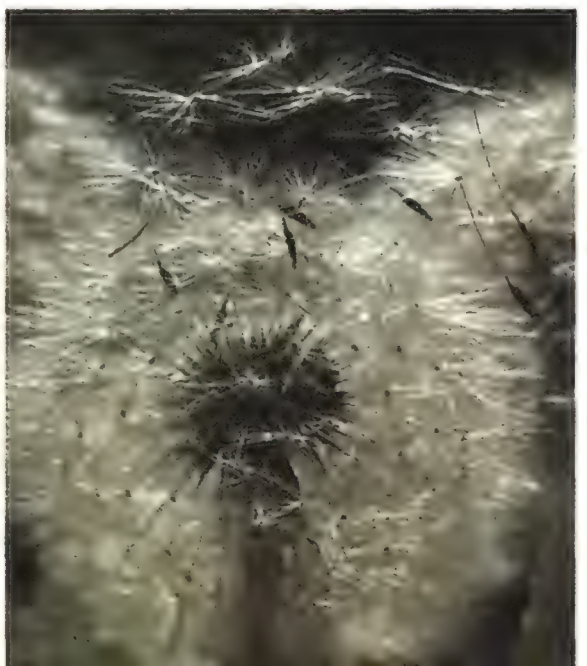
basic family unit is the female, her last-born fawn and the yearling. The older males keep to themselves in small bands, eat different plants and wander for most of the year. The whole herd comes together only during the rutting season.

It was the animal behaviorist, F. Fraser Darling, who first suggested that social behavior could be "an important ecological factor, a part of the environment as large to the deer as society and culture to us." His conclusion was based on two years that he had spent in the early 1930s tracking and observing—and in many respects living with—a herd of red deer in the highlands of Scotland.

On a smaller scale, a study by Charles Yocom and others of the elk herd at Boyes Prairie in the redwoods of northern California also correlates the movements of the animals and their feeding habits with the vegetation of the area. The cows and calves are more effective in spreading the seeds of the meadow plants than are the bulls, living off berry bushes.

The elk are a small part of what is probably the most important relationship of all time: the give-and-take between the dietary needs or whims of the plant-eater and the plant's own determination to spread its kind. Such mutual dependencies scarcely existed until the mid-Cretaceous, when flowers bloomed and plants bore fruit over most of the Earth. The abundance and variety of foods in these new floral communities attracted animals, and the plants began to evolve with them and use them, to foster them for purposes of pollination and seed dispersal. It was a turning point in the evolution of insects, birds and mammals—and in the final reckoning, made possible the emergence of Man.

Dandelions have evolved "parachutes" which use the wind for seed dispersal.



Everything you wanted for great golf—and more.

Sea Island gives you some of the world's greatest golf, 36 superb holes beside the sea. Laid over historic Retreat Plantation. Best of teaching, led by Davis Love. Unlimited play most seasons in attractive package at gracious Cloister Hotel with room, meals, service, many extras, even tennis. Until Mar. 15, $53 person per night double, minimum 3 nights. Mar. 15-May 31, $66. Cloister Hotel, Sea Island, Ga. 31561 (912-638-3611; direct toll-free 800-841-3223.) Sea Island

Install an *Inclinette*

It's the safe and easy way for the handicapped or elderly to go up and down stairs with just a push of the button.

Many families prefer our "Elevette"—the modern, home elevator which can be custom built to the size best suited for your needs and serve two or more floors of your home.

"Elevette"

Tax deductible when doctor recommended.

For Free Literature Call Toll Free

1-800-325-6400

Or write to

INCLINATOR COMPANY OF AMERICA

2340 Paxton St., Harrisburg, Pa. 17105

In business for over 50 years

CONTINUE HER WORK. CONTINUE HER REVERENCE FOR LIFE.

MARGARET MEAD was an incredible woman. She showed the world, as no one has before her, the human significance and social potential of anthropology. She made this once obscure science part of our everyday existence.

She wrote 25 books, over 1,000 articles and received an honorary doctoral degree not once, but twenty times over.

She lived a full and complete life. Yet she died with unfinished business.

She wanted to ensure the training of a new generation of anthropologists so that the more traditional societies left on this earth could become our co-workers in the exploration of humankind.

She wanted to preserve a national treasure of three million anthropological artifacts for the enjoyment and enlightenment of future generations.

To these ends, she embarked on a $5 million fund-raising drive. It was inaugurated by the American Museum of Natural History on the occasion of her 75th birthday. By the time she was nearly 77, her efforts had raised almost $2 million.

Now there will be no more birthdays for Margaret Mead. But she can still reach her goal.

"I chose science," she once wrote, "because I wanted to be sure my work would count."

Her work can only count if it is allowed to continue.

I would like to make Margaret Mead's unfinished business my business. I would like to continue her work. Please accept my tax-deductible contribution for:
☐ $1,000 ☐ $500 ☐ $50 ☐ $25 ☐ $ Other
Please make checks payable to the Margaret Mead Fund and send them to:
Margaret Mead Fund, c/o American Museum of Natural History, 79th & Central Park West, New York, New York 10024.

Name_____

Address_____

City_____ State_____ Zip_____

Book reviews

Sand raked in patterns surrounds grouped stones at Ryoanji temple, Kyoto.

The Ocean in the Sand: Japan, from Landscape to Garden
Mark Holborn
(Shambhala Publications; $15, cloth; $6.95, paper)

The less said about Mark Holborn's *The Ocean in the Sand* the better; for less, as the author would have us realize, is in reality more. However, because Western man insists on having everything conceptualized, I will proceed further.

Throughout the book Holborn takes great care to identify the symbolic intent and the spiritual purpose surrounding the Japanese garden. He speaks of the Dragon Gate cascade in the great paradise garden of Saihoji: "The water pours down onto a 'Carp' stone, from which it showers like a fountain. . . . The carp, because it is a fish that can swim against the current, is a symbol traditionally endowed with strength and perseverance." Holborn has, for the most part, demonstrated a keen insight and extreme sensitivity to Japanese culture. As in the case of the tea ceremony: "The way of tea was a performance in which one could place one's life on the spinning continuum. When perfected it contained symbolism as powerful as that of the Last Supper, and again one could move or even die as effortlessly as the seasons pass or the moon rises." Without a doubt, a splendid expression of the inner spirit of those who participate in the tea ceremony.

The book is a beautifully illustrated work that at one level comes across as a history of the political, social and religious influences on Japanese art, and in particular the Japanese garden. On another level, *The Ocean in the Sand* addresses the symbolic representation of an ideal spiritual state. As the title suggests, the book reinforces the idea that to discover a part of nature is to discover the whole. The spirit of Zen can be found, says the author, "by watching the movement of the clouds, the flow of water, or the passing season." So, then, let it also be with gardens.

Through the integration of an almost poetic text ("stub-bowed fishing boats rise and fall from view behind the waves; the blue of their hulls is the blue of the sea and the sky") and distinctive same-page illustrations (black-and-white was chosen throughout the book for more than economy reasons alone), Holborn succeeds in creating a mood rather than simply a history of the Japanese garden.

The author's discussion of Zen and its expression in the Japanese landscape is adequate. He is successful in explaining the necessity of departing from our Western concept of logic and understanding. Just as the Zen master has no need to understand himself, so too do we react, without logic, to the touch of a hot plate.

For the reader who is not familiar with Eastern thought, those of us who insist on intellectualizing and conceptualizing and those of us who insist on identifying time in a timeless cycle, much of what Holborn attempts to describe may be hard to grasp. Try to preserve purity, to regard inspiration more than technique. For, "when the garden became a sign of wealth, the art became a business; when rocks exchanged hands at high prices, the gardener no longer expressed a vision, but designed a product." *The Ocean in the Sand* should be enjoyed for what it is.
—Masao Kinoshita
Director, School of Architecture,
Ohio State University.

Wind in the Rock
Ann Zwinger
(Harper & Row, $15)

Wind in the Rock is about five canyons on the Grand Gulch Plateau of southeastern Utah. The canyons—Grand Gulch, Whirlwind Draw, Steer Gulch, Slickhorn and Johns—empty into the San Juan River, and in recent times were formidable barriers for Mormon missionaries and others who explored and settled in the region. In more distant times they were the secure home of the Anasazi, a people who came to the area at least 15,000 years ago, but who had already abandoned it when the Navajos came. And, throughout, they sheltered the plants and animals that adapted to the

LOVE LETTERS TO A CAR COMPANY?

You'd probably never dream of writing a love letter to the company that built your car. Yet at Volvo, we get them all the time.

Maybe because 9 out of 10 people who buy new Volvos are happy.

But some people who own Volvos aren't merely happy. They're absolutely ecstatic.

People like Orv Jacobson of Ocean Shores, Washington: "Now that it's at the 200,000 mile mark, I figure it has another 200,000 more miles in it...you just don't trade in members of your family."

Mary Howard of West Trenton, New Jersey: "This is the first time in my life that I still had a good car after it was paid for."

Or, The Reverend Ernest G. Olsen of Westfield, New Jersey who, after 225,000 trouble-free miles, says simply: "Love that Volvo."

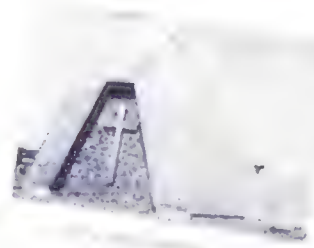
If you can't think of any love stories to write about your present car, maybe your next car should be a Volvo.

After all, why buy a car you might regret? When with a Volvo, you'll probably end up never having to say you're sorry.

VOLVO

A car you can believe in.

© 1979 VOLVO OF AMERICA CORPORATION
LEASING AVAILABLE



harsh environment and which, then and now, provided sustenance (and sometimes death) for those who entered them.

The canyon's secrets were gleaned from the observations of others and by Ann Zwinger herself, who walked the canyons, observed their flora and fauna, explored the ancient dwellings and granaries of early inhabitants, and experienced first-hand the rugged beauty of the place. But she did not stop there. She illustrated the highlights of her observations with her own drawings and has included references and background notes at the end.

Canyon tree frog; drawing by the author

But the book is not simply a description of the canyons or a historical narrative of early inhabitants and explorations. Nor is it a dry list of plants and animals known to inhabit the canyons. It is, instead, a tapestry of all these things, woven on a background of human feelings—of delight and terror, of comparisons and intuitions, and of very personal emotions. The author says, on leaving Lower Grand Gulch: "I turn away with regret, feeling freshly molted. Down in the canyon I grew a little, understood a little more, perceived even more, and in so doing split the carapace of time and place I commonly wear. Split it, wriggled out of it, left it there, a stiff and empty shell to be blown away by a canyon wind. The new skin was extra-sensitive, and so I perceived the canyon about me with new eyes, more sensitive touch . . . and I walked protective of this as yet unhardened integument.

"And now I walk out, having experienced this shucking-off of everyday ways, to return to the everyday world. But for a short while that newly bared skin is too delicate to cope with the noise and the smell and the denser necessities of living. It takes a few days for the new carapace to harden, smooth out, protect again. Until then I feel as vulnerable as the crab

CUDDLE UP
with our FREE CATALOG of European-style DOWN QUILTS
Cotton or cotton blend fabrics, filled with your choice of duck or goose down. Decorator sheetcase covers and puffy pillows, too. Our quality is guaranteed. And our prices are cozily low. Send us your name and address and we'll rush our catalog.
WARM THINGS
DEPT. SO — 36 FRONT STREET
SAN RAFAEL, CALIFORNIA 94901 (415) 453-4262
48 HR. SERVICE—MC & BA ACCEPTED

DAYTRIPS in EUROPE
Wonderful ideas for your next European adventure! Designed for people who like to get around on their own, our unique travel guides show you how to explore fascinating places on foot. For *FREE* information please write:
GREAT TRIPS, box 5199-S
new york, ny 10017

There's Nothing Like It!
Wonderful Sight Light
No Glare . . . No Squint . . .
Contemporary Model
Traditional Model
Specially designed optical system uses standard bulb
Up to 5 times the light of conventional lamps . . . yet completely glareless!
A PERSONAL CHAIRSIDE READING LAMP
* READING SMALLEST PRINT
* SEWING BLACK ON BLACK
* FULLY ADJUSTABLE
Avocado, White or Black with Upright/Arm in Solid Satin Brass: Traditional ..... $94.50; Contemporary $81.50
Overall Satin Brass: Traditional ..... $108.50; Contemporary $94.50
BUY AMERICA'S FAVORITE READING LAMP!
Shpmt. ppd. in Cont. USA • Check or MO
Credit Cards Accepted: VISA, MC, AX
LIGHT-CRAFTERS Dept. N2 36 Sherwood Place Greenwich, Conn. 06830
QTY. ITEM COLOR
Name
Address
City State Zip
Credit Card # Exp.
"10 years selling discriminating customers!"

PASSAGES, INC.
DEDICATED TO MAKING YOUR VACATION A STIMULATING GROWTH EXPERIENCE
OFFERS A NEW KIND OF ADVENTURE
EXPLORE YOUR OWN INNER-SELF WHILE SAILING OVER A TROPICAL SEA...THROUGH THE MEDIUM OF A RECREATIONAL MARATHON GROUP
Groups composed of people with similar interests and compatible background lead by a fully trained, experienced psychiatrist will sail for a week from a Caribbean port.
Write: Passages, Inc. P.O. Box 12132, St. Petersburg, Fla. 33733.

Sea-Fari® into Nature
Voyage down the coast of Mexico and journey to remote islands. Explore the hidden worlds of whales, sea lions and exotic birds in their wilderness habitat.
For more info., write or call
H & M Landing
2803 Emerson St. San Diego
CA 222-1144

FAMILY CREST RINGS
Solid 14K Gold, $210. Sterling Silver, $95. WE WORK IN THREE BASIC WAYS—If you have a crest, send a copy of it, otherwise you may check it against our list, or you may design your own (see below). SEND FOR OUR FREE COLOR CATALOGUE. If, in addition to free catalogue, you want our booklet with over 20,000 names for which we have crests available plus instructions on how to design your own crest, send us $1.00.
HERALDICA IMPORTS, INC. D•SM
21 WEST 46th ST. • NEW YORK, N.Y. 10036

Land of Legends
Mongolia
See breathtaking mosques and mosaics. Stay in a remote nomadic tent camp. Explore the Gobi. Visit renowned Lake Baikal. Small groups, stimulating lectures. 22 days. Write for detailed itinerary.
Society Expeditions
Dept. SM Box 5088, University Station, Seattle, WA 98105
Name
Street
City/State/Zip
Expeditions also to: ☐ New Guinea ☐ Antarctica ☐ Patagonia ☐ Galapagos Is. ☐ Easter Island

skittering across the rock in his new soft clothes or the dragonfly clinging to the sedge stalk and tentatively flexing wrinkled wings."

I have felt that way after scuba diving into deep waters off Andros in the Bahamas, and I have sensed "newly bared skin" after safely landing a small plane in bad weather, but being able to express that freshly molted feeling myself is another thing indeed.

But Ann Zwinger is not an ordinary observer; she is a diligent researcher and respecter of facts who sees her world through the eyes of a poet and artist, and can convey what she sees without compromising reality.

Mrs. Zwinger considers conservation to be her motivating force, and has spoken of her desire to communicate its necessity to those beyond the community of conservationists "who already care." That is a commendable goal and I wish her well—for one of her paragraphs projects more compassion, understanding and love for her environment than do either the strident calls for conservation by some of those who "already care," or the harsh and obscure volumes of caveats and prohibitions produced, in good faith, by regulatory bodies. Perhaps all three approaches are necessary, but more of Ann Zwinger's style would be welcome.

—C. W. Hart jr.
National Museum of Natural History

Recovering Sarepta, A Phoenician City
James B. Pritchard
(Princeton University Press, $16.50)

It's hard to travel around the Mediterranean without running into some sign of the Phoenicians, including Carthage (pp. 42-55). In fact, most of what we know about these intrepid sailors and traders comes from the remains of their far-flung settlements and what others have written about them. Even the name "Phoenician" is Greek, and the Phoenicians themselves might not have recognized it.

In 1968 James B. Pritchard, professor of religious studies, emeritus, at the University of Pennsylvania, set out to fill the gap in our knowledge of this intriguing culture. Pritchard was particularly interested in exploring an urban settlement that had thrived in the Phoenicians' own homeland during its peak of prosperity, about 1200 to 600 B.C. The spot he finally selected was a small hill, or tell,

The thing that makes a Louisiana vacation different is that Louisiana is different. From the primeval beauty of a wilderness called Atchafalaya, to its easy Mediterranean approach to living, Southern courtliness and subtropical greenness, Louisiana is the exotic sister in the family of American states.

Louisiana Office of Tourism
Dept. SM9 · P. O. Box 44291
Baton Rouge, LA 70804

Send me your new guidebook to Louisiana.

Name _____
Address _____
City _____
State _____ Zip _____

Louisiana. What a way to get away.

Nature Expeditions International

Combine adventure, discovery, learning and vacation on nature and cultural expeditions worldwide.

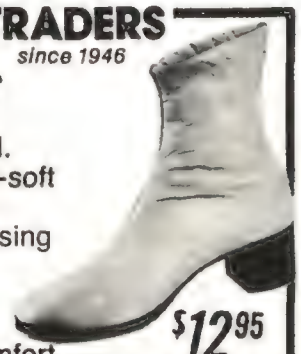
1979 Expeditions
American West • Alaska • Japan
Ecuador, Peru & Easter Island
India & Sri Lanka • Hawaii
Australia & New Zealand
Galapagos • Scotland • New Guinea
Afghanistan • Himalayan Kingdoms • Kenya
Mexico • Other Destinations Worldwide.

Expert leadership, Small groups, An in-depth travel experience.

Nature Expeditions International
599 College Ave. • Dept. SS • Palo Alto, CA 94306 • (415) 328-6572

OLD PUEBLO TRADERS *since 1946*

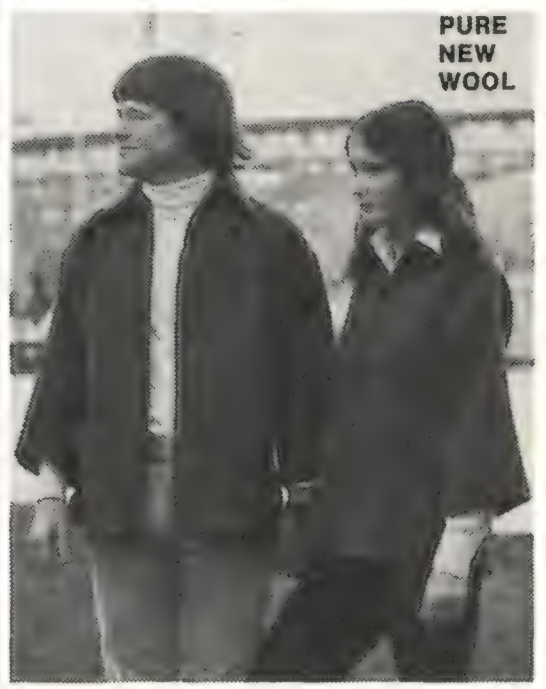
DEMI BOOT



takes a new stand.
Soft & sturdy in Kid-soft polyurethane/nylon laminate, foot caressing bonded lining, resilient rubber-like sole, & 1½" heel for walking comfort.
CAMEL, BONE, WHITE, NAVY, BROWN, BLACK.
Comb. full & half sizes: 5-8½ + 9/10.

$12.95 plus $1.95 p&h
SATISFACTION GUARANTEED

FREE CATALOG with order
OLD PUEBLO TRADERS Dept. SM2DB
600 S. Country Club, Tucson, AZ 85716
Call for charge orders: 602-795-1281
(no collect calls please)
ENCLOSE $1 FOR FASHION CATALOG
(refundable with first purchase)



WELSH FISHERMAN'S SMOCK

Enjoy the comfort of this practical overshirt for men or women. A full length zipper is used in a modern adaptation of the Welsh Fisherman's Smock used along the Welsh coast for over 400 years. The material is 12 oz. pure wool Welsh flannel. The smock has a vee-neck, and two convenient pockets. The color is a soft blue-grey, coordinating well with denim.

Sizes S (34-36) M (36-38) L (40-42) XL (44)
No. 1660 Smock with zipper $35.50

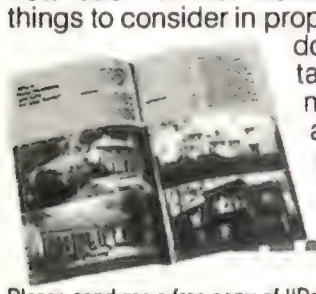
State size
Please add $1.50 for shipping
Satisfaction Guaranteed Send for our unique catalog
Visit our Seattle store at 1523 NW Ballard Way

David Morgan
Box 70190, Seattle, WA 98107

Free Offer from Pella.

A window and door idea book for traditional and contemporary homes.

16 pages in full color packed with interesting examples of how the right windows can add beauty and liveability to your home. Tells how Pella Wood Windows make washing easier, cut energy costs and need no painting. Contains a helpful guide to different window types, and how each works. Describes the important things to consider in proper placement of windows. In short, it contains everything you need to know to make an intelligent decision about windows. And it's yours free!



Please send me a free copy of "Pella Window and Door Ideas."

Name _____

Address _____

City _____

State _____ ZIP _____

Telephone _____

Mail to: Pella Windows & Doors, Dept C16B9
100 Main St., Pella, Iowa 50219.
Also available throughout Canada.
This coupon answered within 24 hours.

© 1979 Rolscreen Co.

Only Pella offers it all.

near the modern village of Sarafand, between Sidon and Tyre on the Lebanese coast. The area seemed ideal for a Phoenician harbor, and the village name bore a strong resemblance to a well-known but undiscovered city, Sarepta.

This book, complete with Phoenician-purple cover, tells the story of Pritchard's important find. It was written mainly for the nonprofessional archaeologist, but it contains many useful nuggets for the general reader who wants to know more about how the Phoenicians lived and how archaeologists work.

In their first season, Pritchard's team found an interesting Roman port, complete with a complex system for purifying water, but no sign of Phoenician occupation. The next year, on a bluff overlooking the sea, they uncovered two pieces of burnished red pottery. The style was so distinctively Phoenician that the diggers knew they had hit pay dirt.

Over the next four years, the excavations gradually built up a picture of Iron Age Sarepta, a busy, middle-sized port with an important industrial sector. A number of kilns indicated that pottery was a major product. An elaborate installation for crushing olives showed that oil was probably an export. A cache of crushed murex shells revealed that the locally woven textiles—loom weights and spinning whorls were also unearthed—were tinted with the famous purple dye extracted from those tiny mollusks.

Finds from the residential quarter showed that Phoenician women, like their sisters everywhere, took great care with their appearance. Cosmetic jars, mirror handles, pins and needles of all sizes—fashion, it seems, is never out of date. Nor is food. The houses contained beehive-shaped ovens that look no different from those that are used in some nearby villages today.

But Sarepta lacked one commodity that is almost as universal as makeup and cooking pots—weapons. Pritchard theorizes that the city managed to use its cunning and trading contacts to avoid clashes with potential enemies.

Ironically, Sarepta's success at peacemaking has hampered the archaeologists. The city was never destroyed, never frozen in time by fire or fear, and the overlapping layers of settlement are harder to decipher. The city's success at trading also presents a problem, since the Sareptans imported papyrus from Egypt instead of using clay tablets, and few of their written records have survived. Still, this book gives us our first glimpse at a fascinating city, a place Phoenician sailors thought of as home as they roamed the ancient world.

—*Steven V. Roberts*
Washington correspondent,
New York Times

Life in the English Country House, A Social and Architectural History
Mark Girouard
(Yale University Press, $19.95)
The National Trust Book of Great Houses of Britain
Nigel Nicolson
(David R. Godine, $30)

The English tradition of afternoon tea, one would have thought, was created along with the monarchy. Not so. Only during the mid-19th century, as the dinner hour inexorably retreated, did five-o'clock tea become customary in fashionable houses. And what began as a quick, surreptitious snack of tea and cakes by the ladies quickly evolved into a major ritual of country-house, and in fact all of English, life.

Mark Girouard's immensely readable, almost gossipy account of life in the English country house from medieval to modern times is full of such minor revelations. We learn, for example, that shrewd English monarchs quite often parked themselves in their subjects' homes not for the pleasure of country pursuits but for political reasons. Such ruinously expensive visits, where the best rooms had to be specially furnished, if not a new wing built, were a way of taking the sting out of powerful families.

We also learn of the pomp and circumstance surrounding a simple, everyday medieval supper in which platters of meat were escorted by a procession of gentlemen through the great hall as all those along the way rose to their feet. Up the winding staircase it continued to the lord's great chamber, where the table was set and the meat ritualistically tasted for poison. Only then was the lord called to supper. "By now," notes Girouard, "the meat must have been rapidly congealing, but this seems to have been of no concern in the Middle Ages."

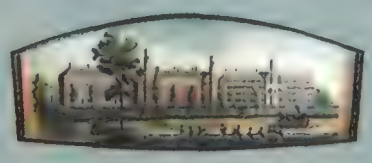
The writing is anecdotal and entertaining, but it is also a serious academic work. Using novels, plays and other original

College Chairs by Hitchcock

Here's an exquisite reminder of college days (and just in time for graduation) – a magnificent, hand woven rush seat arm chair for home or office. The back slat features one of the hand-stenciled scenes created by our artists expressly for each of the schools shown.

Your chair will be finished with your name and class inscribed in gold leaf on the back. Please allow eight to ten weeks for delivery.

HARVARD



YALE

DARTMOUTH

COLUMBIA

BROWN

CORNELL

PRINCETON

L. HITCHCOCK. HITCHCOCKS-VILLE. CONN. WARRANTED.®

THE HITCHCOCK CHAIR COMPANY
Riverton, CT 06065

Please type or print:

I enclose $165 (plus 7% Sales Tax for Connecticut residents) for a *(specify)*..... Chair by Hitchcock. I understand I will pay the shipping charge upon delivery *(expected to average about $35. in the continental U.S. Special arrangements must be made for shipment abroad.)*

Please charge my ..... Master Charge or ..... VISA Account No. ..... My current credit card shows an expiration date of .....

Inscribe the following name and class: ..... 19.....

Ship to: NAME ..... TELEPHONE .....

ADDRESS .....

.....

The Defiant woodburning stove
"The best woodburning stove to come out of an American manufacturing plant in the past 70 years."
—NEW TIMES Magazine

Classic Grace, Total Efficiency.

We designed the Defiant and its smaller brother, the Vigilant, to embody the simple grace and functional efficiency seen in much of the Early American architecture surrounding us here in Vermont. We build them to continue that tradition, proving that an efficient woodstove can be a pleasing piece of furniture rather than an ugly alternative to the high price of oil.

Our stoves are the first airtight, all cast iron and thermostatically controlled woodstoves made in America. Both are fully baffled, with pre-heater air passages and secondary combustion chambers to maximize heat output.

Both stoves will hold a fire up to 14 hours. Both offer smokeless loading of large-size logs. With the doors open or off, you can warm your feet at a friendly fire.

Find out more about the lifetime investment in fuel-saving warmth the Defiant and the Vigilant offer you.

☐ Please send your 16-page Operation Manual and color literature. I enclose $1 to cover first class postage and handling.

Name_____

Address_____

City_____ State_____ Zip_____

Vermont Castings, Inc.
6192 Prince Street, Randolph, Vermont 05060
Telephone: 802/728-9561 or, 728-3355

(half size)

FROG Stickers

This Happy Green Frog, printed with your name and address or slogan adds a little fun to letters, books, luggage, toys, promotions....

Frog Shape...Self-Stick
100 for $5.50 or 200 for $7.90 ppd.

FROGS, Box 735-E, Acton, Mass. 01720

At Last!

A Full-Feature Workbench at an *Affordable* Price!

- Huge 12½ sq. ft. surface area
- Solid rock maple construction (225 lbs!)
- 2 large capacity vises
- **Life-Time** Warranty
- Rugged 2" thick laminated top
- Massive vise jaws will hold even delicate work
- Available in kit form too!
- Easily disassembles for moving

Made in U.S.A

Until now, quality home workbenches have usually been too expensive and too small. This bench is available direct from the factory at an incredibly low price.

GARDEN WAY RESEARCH, Dept. 90472W
Charlotte, Vermont 05445

Longleat, called by Nicolson "the only truly classical" Elizabethan house.

sources as diverse as *The Booke of Courtesy* (c. 1420) and *Memoirs of a House Steward* (1949), Girouard has taken these revered museum pieces, now devoid of human activity, and re-created their former sights, smells and even noises.

This is no mean feat. One of England's foremost architectural historians has shown others in the field that there is a way of discussing great architecture that encompasses more than talk of the stylistic evolution of broken pediments and engaged pilasters. Girouard links changes in architectural form and plan to changing life-styles and notions about the proper iconography of wealth. In fact, the book is a compendium of almost everything you ever wanted to know about the English upper crust: how they ate, entertained and treated their servants, and, as they began to do these differently, how their houses changed too. Power for centuries in England was based on the ownership of land. English country houses were, and to some extent still are, the houses of the ruling class.

The fault of this book is that despite being a groundbreaker in architectural history, it comes dangerously near being as one-dimensional as traditional architectural histories. Architectural vision goes far beyond simply serving a client's functional needs. Some of these country houses, such as Easton Neston by Hawksmoor, representing masterful esthetic innovations that can only be described in art-historical terms, are ignored, out of choice, by the author. Had he included more such analysis, his book would surely be the definitive work of its kind. As is, it only tells part of the whole, complex story.

Nigel Nicolson's book, written as a guide, useful for traveling to 39 of the country houses under the shelter of the National Trust, does not fill this gap. But it does communicate a layman's enthusiasm for the architectural magnificence of these buildings that the other book lacks.

Nicolson, whose mother, Vita Sackville-West, was born at Knole in Kent, one of the great country houses, has a soft spot for these buildings and has written a personal appreciation. Thus he can say of Lord Grey, owner of Uppark, built about 1690: "He was a mean man, a seducer, a political turncoat and a trickster. . . . But he did build Uppark, and for that much can be forgiven him."

Taken together, these books are full of insights into the stately homes of England, Scotland and Wales, most of which are now open to the public and relatively accessible from London. No doubt they represent some of the greatest domestic architecture ever built. But they are more than just buildings to the English: they represent centuries of a way of life that, for the most part, is no longer possible. The English value their heritage. As Nicolson says of perhaps the greatest English country house of all, the exquisite Chatsworth in the Midlands, "[it] is still visited by hundreds of thousands of people annually, who rightly feel that to see this house at least once in a lifetime is an essential part of an Englishman's experience."

—Lydia Robinson
Architectural critic and writer

Once a year, a world two centuries old becomes brand new.

Spring in the 18th Century is a time for renewal. For flowers and for the spirit.

Take a walk through spring in the 18th Century, when the flowers are reborn and the windows are reopened. It's an experience you can have in only one city in the world. Take in the sights and sounds as you walk through 90 acres of colonial gardens.

From the instrument maker's shop comes the music of the harpsichord. In the distance, the blacksmith keeps time with his hammer. The sweet smell of the baker's freshly-made gingerbread fills the air.

This is Williamsburg in spring, where the silversmith, the milliner and the cooper, the gardener, the wigmaker and the tavern keeper still live and work in the 18th Century.

Come see the fife and drum corps parade through the city. Inspect the magnificent formal gardens at the Governor's Palace and see the miller's windmill turn in the spring breeze.

The roses that bloom in spring in Colonial Williamsburg are an 18th century species found in few other places in the world today. The bricks are made as they were made 225 years ago. The horsepower is provided by real horses.

From April 1-4 this year, we're sponsoring the 33rd Williamsburg Garden Symposium. April 21-29 is Virginia's Historic Garden Week.

The flowers will be blooming, the bakers will be baking and the miller at the windmill will be grinding corn.

So don't miss it. It only happens once a year. And it only happens in Williamsburg.

VISIT WILLIAMSBURG NOW.
Make reservations to stay in Colonial Williamsburg's own Williamsburg Inn, Lodge or The Motor House.
See your Travel Agent; write Box CN, Williamsburg, Virginia 23185; or Dial 1-800-446-8956 for the 18th Century.

COLONIAL Williamsburg
WILLIAMSBURG, VIRGINIA

That Indefinable Look of *Casual Self-Assurance* Yours, in Haband's Best Executive Division

Corduroy Slacks!

Here is the same impeccable tailoring you would have a right to demand in slacks that sell at designer prices! Like what? Like twenty nine bucks per pair, for instance, "in the better department stores." And luckily, too, you don't have to sacrifice comfort while looking great, for these warmer weight 50% Polyester and 50% Cotton Corduroys keep getting softer and more comfortable all the time! Hassle-free, they wash & dry in the machine, keep in shape without ever pressing. Smart straight-leg style features our always-neat-and-trim deluxe woven linings, deep no-hole pockets, "Talon®" no-snag zipper. Already hemmed & finished, all set to go everywhere you do!

Choose Colors: Buckskin TAN, Midnite NAVY, Hunter GREEN

Waist Sizes 29-30-31-32-33-34-35-36-37-38-39-40-41-42-43-44-46-48-50-52-54.
Inseam Lengths 26-27-28-29-30-31-32-33-34.

Order now and be ready to look your best, feel your most confident, for all your leisure-time activities! But hurry – they'll not be here long at this low, low price: *Mail this Coupon!*

Corduroy NO IRON Slacks

2 pairs for **24.95** 1 pair $13.95

SPECIAL: 3 for $37.25

Haband's EXECUTIVE DIVISION
265 N 9th St., Paterson, NJ 07530

Please send ..... pairs of Permanent Press Corduroy Slacks, for which I enclose my remittance of $ ..... plus $1.25 toward postage and handling.

GUARANTEE: *Remittance refunded in full if on receipt I do not choose to wear the slacks!*

COLORS	Qty.	Waist	Inseam
TAN Corduroy			
GREEN Corduroy			
NAVY Corduroy			

SHIP AT ONCE TO:
788-008
Name .....
Street ..... Apt. # .....
City .....
State ..... ZIP .....

Haband's EXECUTIVE DIVISION

Additional reading

Carthage (p. 42)

"Roman Carthage" by J. H. Humphrey and J. G. Pedley, *Scientific American,* January 1978

"Carthage 1977: the Punic and Roman harbors" by L. E. Stager, *Archaeology,* 1977

"A Metropolitan Landscape: the Late Punic Port of Carthage" by H. Hurst and L. E. Stager, *World Archaeology,* February 1978

Salmon war (p. 56)

Uncommon Controversy, prepared by the American Friends Service Committee, University of Washington Press, 1973

"The Salmon, the Indian and the Boldt Decision" by Fred Brack, available from Education Coordinator, *Seattle Post-Intelligencer,* Box 1909, Seattle, Washington 98011

The Salmon: Their Fight for Survival by Anthony Netboy, Houghton Mifflin, 1974

Albert Einstein (p. 68)

Albert Einstein, Creator and Rebel by Banesh Hoffmann with Helen Dukas, Viking Press, 1972

Einstein, The Life and Times by Ronald W. Clark, Hodder and Stoughton (London), 1973

Einstein by Jeremy Bernstein, Viking Press, 1973

"A Calendar of Events Marking the Einstein Centennial," *The Chronicle of Higher Education* (Washington, D.C.), December 11, 1978

Corcoran Biennial (p. 80)

36th Biennial Exhibition of Contem-

WINDWATCH™ ANEMOMETER—WIND VANE $29.95

Neon lights in indoor indicator show wind speed and direction. Decorative indicator with gold dial in dark mahagony case. Designed for desk or wall mount. Outdoor instruments of durable aluminum with electric parts enclosed in rigid vinyl housings. Easy to assemble and install. Attach directly to roof or pole. Comes with wire and materials for installation up to 60 feet. Uses regular 120V AC. Unique low amp circuit assures absolute safety. A fascinating addition to any home. Five year limited guarantee. 15 day trial. Satisfaction or money back. Only $29.95 postpaid. Immediate Delivery.

WINDWATCH MFG. Dept. H-1, 104 Heimann San Antonio, Texas 78205

ELECTRIFY YOUR BIKE!

PEDALPOWER exciting new bike drive tames tough hills. Be independent. Shop when you want. Fits all Bikes, Adult Trikes. Installs in minutes. Thousands sold. Recharges overnite. Travels 100 miles for a dime Call or send for FREE illustrated booklet GENERAL ENGINES CO., Mantua Blvd., Sewell, N.J. 08080

MRS. CONNETT'S CHATEAU COUNTRY COOKING SCHOOL

3 hours from Paris in beautiful Loire Valley. French recipes taught in English by Paris Cordon Bleu trained teacher, U.S. diplomat's wife. 7 day courses in medieval rectory kitchen. Classes, all meals, chateau visits, $675 or $850 depending on choice of lodging. 66 rue Voltaire 37500 Chinon. Tel (47)93-2804

New Way to Sleep!

Tee-PJ's resemble a T-shirt but are over foot longer 100% cotton, rib-knit soft combed. Gives when you move, eases up when you relax. No bind, no bunch, no chafe, no buttons, no ironing. Most comfortable sleeper you've ever worn or money back. Choose snow white or soft blue. S-M-L-XL (to ensure best fit include height-wgt.) ORDER NOW while prices include postage/handling

$8 ea. **3** for **$18**

NOW-Tee-PJ's available in long sleeves

$10 ea. **3** for **$25**

WITTMAN TEXTILES
Dept. 266, Hobe Sound, Fla. 33455

a catalog that's unique? yes, mine is!

I'm Lillian Vernon, here to tell you what "unique" means to me. It means beautiful things at affordable prices—that's really unique today! It means my own personal shopping selection—gifts for everyone, decor, jewelry, bath and beauty aids, gourmet needs, personalized items, collectors' treasures—and many European imports that are ours alone. Finally, it means my 27-year-old tradition of fine service, and a no-strings guarantee. Over 100 color pages—just send your name and address and we'll speed one to you!

LILLIAN VERNON® Dept. T25
Box LV, 510 S. Fulton Ave., Mt. Vernon, NY 10551

Name _____
Address _____
City _____ State _____ Zip _____

THERE'S A CRY

for the worthwhile, the different, the truly memorable . . . HERE IT IS!

COVERED WAGON VACATIONS

Unique for family and single adult • deluxe, authentic 4-day wagon train experience for adventurers from all over the world. Days of momentous pioneer happenings • unforgettable campfire evenings • up to 30 covered wagons • saddle horses • stagecoach • Pony Express • Indian raid • excellent food • 55 miles of historic trail • May-August • **EVERYTHING FURNISHED.** Color brochure, reservations:

WAGONS HO, INC.

(913) 754-3347 / Box SM15 / Quinter, KS 67752

MOZART

WEAR MOZART

Bach, Beethoven, Mozart, Vivaldi, Woolf, Thoreau, Dostoevsky, Fitzgerald, Joyce, Sherlock Holmes, Kafka, D.H Lawrence, Sand, Shakespeare, Tolkien, Proust, Escoffier, Pablo Neruda, Gertrude Stein, Picasso, Blake, F.L.Wright, Bogart, Einstein, Freud, Jung, Nietzsche, Goethe, Plato, Tutankhamen, others available.
T-SHIRTS: white $6.50 4/$22 red or blue $8. 4/$28 SWEATSHIRTS: gray $12. 2/$21 sizes sm. med. lg. xlg. all cotton NIGHTSHIRTS: red or blue (s,m,l only) $11. 2/$20 TOTES: $9.50 2/$18 APRONS: white $8. 2/$14
prices ppd. CANADIAN customers add $1. per piece

HISTORICAL PRODUCTS box 220F Cambridge, MA 02138

MEN'S WIDE SHOES

EE to EEEEEE
Sizes 5-13

More than 100 styles for every purpose. Top quality. Sensible prices. Not sold in stores. Send for FREE CATALOG.

HITCHCOCK SHOES, INC.
Dept. 21B , Hingham, MA 02043

ORIGINAL U. S. PATENT MODELS FOR SALE
Approx. 30,000 left—unpacking—$40 up.

Help preserve our heritage as we have since 1941—write us your interest.

O. RUNDLE GILBERT

Mr. & Mrs. O. Rundle Gilbert
Garrison, N.Y. 10524
Tel. 914-424-3657

CANOE TRIPS IN WILDERNESS NOVA SCOTIA JULY - SEPT.

Small groups with licensed guides. Excellent Food. Write Granville Nickerson(S), RR 4, Annapolis, Royal, Nova Scotia, Canada BOS 1A0

Silver Replating

SALE

25 YEAR WARRANTY!

Limited time only. Any item replated at sale price Have your worn antiques, heirlooms QUADRUPLE SILVER PLATED by America's largest *replaters.*

FREE DENT REMOVAL

SEND FOR
•Free Price List
•25 Year Warranty

SENTI-METAL CO.
1919 Memory Lane
Columbus, Ohio 43209 Dept. SM2

porary American Painting by Jane Livingston, Corcoran Gallery of Art (catalog of exhibition), 1979
Corcoran, published by the Corcoran Gallery of Art, 1976

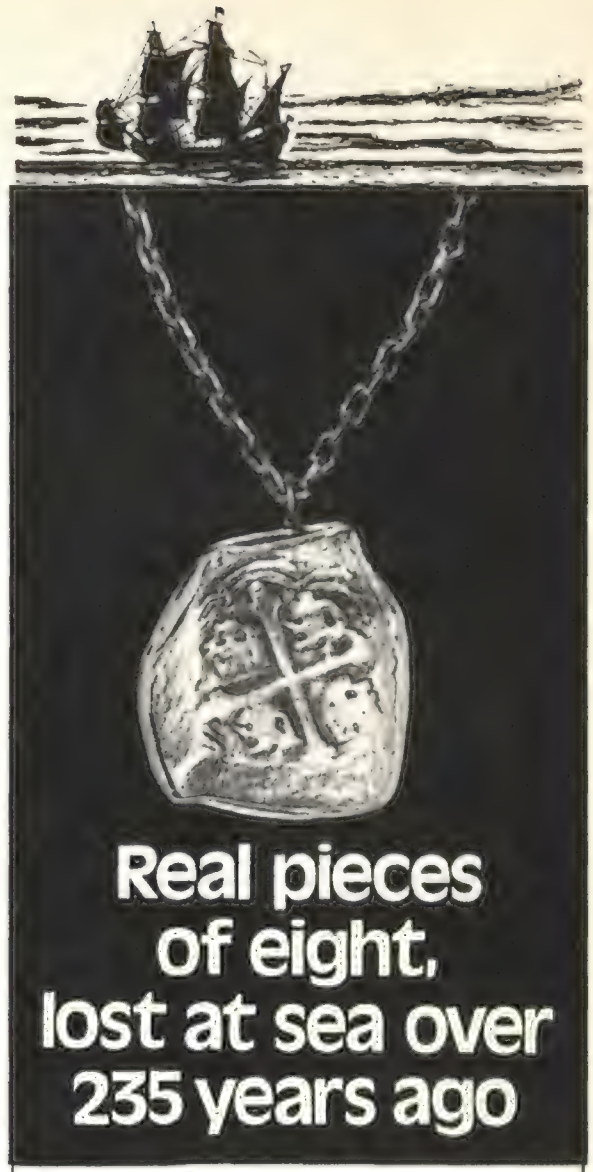
Keystone-Mast stereographs (p. 88)
The World of Stereographs by William C. Darrah, W. C. Darrah (Gettysburg, Pennsylvania), 1977
Russia in Original Photographs, 1860-1920 by Marvin Lyons, Scribners, 1978
The Last Tsar by Virginia Cowles, G. P. Putnam's Sons, 1977
Russia Under the Old Regime by Richard Pipes, Scribners, 1974

Earth-sheltered houses (p. 96)
Earth sheltered housing design edited by Charles Fairhurst and Thomas Bligh, University of Minnesota Press, 1978
"Underground Architecture" by Andrea O. Dean, *AIA Journal* (Washington, D.C.), April 1978
"Underground Buildings" by Elaine Smay, *Popular Science,* April 1977
"Your Next House Could Have A Grass Roof" by Richard Dempewolff, *Popular Mechanics,* March 1977

Butterflies (p. 106)
The International Butterfly Book by Paul Smart, T. Y. Crowell, 1975

Robert Tatin (p. 110)
"France's House of the Golden Number" by Jeanne Brody, *International Herald Tribune,* September 22, 1977
The Banquet Years; The Arts in France, 1885-1918, Alfred Jarry, Henri Rousseau, Erik Satie, Guillaume Apollinaire by Roger Shattuck, Harcourt, Brace, 1958
The Ubu Plays by Alfred Jarry (translated by C. Connolly and S. W. Taylor), Grove Press, 1969

Flower evolution (p. 119)
Hummingbirds and Their Flowers by Karen A. and Verne Grant, Columbia University Press, 1968
Bees, Their Vision, Chemical Senses and Language by Karl von Frisch, Cornell University Press, rev. ed. (Ithaca, New York), 1971
The Evolution and Classification of Flowering Plants by Arthur Cronquist, Houghton Mifflin, 1968



Treasure from the Deep

Yes, they are genuine treasure coins of Spain...the legendary solid silver Pieces of Eight. Lost in the heavily laden holds of Spanish Galleons to the hurricaned reefs of the Seven Seas, over 235 years ago.

Guaranteed Genuine

Each coin was struck by hand from a bar of solid silver...hence, *no two* are identical. Though sea worn, each amazingly displays at least two arms of the Cross and details of the Spanish Crest. From the best recovered, each is fully authenticated by wreck and date.

Now a Unique Pendant

Now they're stunning pendants, intriguing *gifts of history, for her, for him, for you.* Each gift packaged in a reed basket, with our Certificate of Authenticity, History and full 60 day return privilege. Choose from three sizes: 4-reale (shown actual size) #1002, $195; 8-reale (approx. size of U.S. half dollar) #1217, $295; 1-reale #1003, $95.

4 and 8-reale framed in bezel on 24" chains. 1-reale unbezeled on 16" chain. All bezels and chains sterling silver.

Please add $2.50 postage per order. We will ship anywhere. Major credit cards accepted. Include card no. and expire date with order.

Phone orders —call collect 24 hours a day 802-- 229-0394. Write for free catalog.

WORLD TREASURE SOCIETY

World Treasure Society
1107 School Street, Box 218
Montpelier, Vt. 05602
A Division of
International Coins & Currency, Inc.
TELEX 954616

Think ahead to spring with the Smithsonian Catalogue.

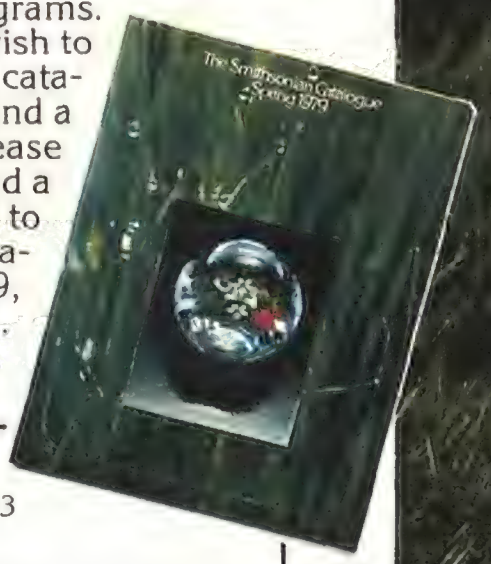
With Winter Here, Can Spring Be Far Behind?

The first full-sized Smithsonian Spring Catalogue is filled with gift ideas that will help you anticipate spring—no matter how cold February may be. Catalogues are in the mail now for all Smithsonian Associates. With a wide variety of items relating to our Collections, this is truly a Smithsonian Catalogue.

We have chosen our "Picnic on the Mall" to give you but a preview of the Spring Catalogue. Our picnic scene has been created so that this spring you can enjoy the feeling of the National Mall wherever you may be. We have set our picnic in turn-of-the-century America when family picnics were eagerly anticipated events, just as they are now.

Smithsonian Associates are reminded that every item we offer has a special Smithsonian Members' price. Any financial benefits realized by the Institution will be used to further its educational programs.

Should you wish to receive another catalogue, or have us send a copy to a friend, please let us know. Send a note or postcard to Smithsonian Catalogue, Box 199, Washington, D.C. 20560.



SMITHSONIAN INSTITUTION
Box 2456, Washington, D.C. 20013

Name _____

Address _____

City _____ State _____ Zip _____

Telephone No. _____

I am a Smithsonian Associate ☐ Yes ☐ No

Item No.	Quant	Description	(s/h) Shipping	Price	Total

TOTAL _____

☐ Payment enclosed
Charge My ☐ Master Charge ☐ VISA ☐ American Express

Account # _____

Expiration Date _____

Signature _____
(required for credit card orders)

K-21

1. THE VISITORS TO THE MALL are a soft sculpture family. Each of these life-sized muslin dolls has been carefully hand-crafted and dressed in clothing that captures a feeling of nostalgia. Mother, daughter and baby have dresses that are trimmed in lovely laces reminiscent of the early 20th century. Individually or as a group these 100% polyester filled soft sculpture dolls make delightful conversation pieces. **a.** Mother is 5 feet 1½ inches tall, has button eyes with long eyelashes, and thick yarn hair dressed with dried flowers. 353417 $350.00 (Members $315.00) (s/h included). **b.** Father stands 5 feet 7½ inches tall from his espadrilles to his fur-like hair. His appearance is enhanced by his rabbit fur beard and bright red suspenders. 353409 $350.00 (Members $315.00) (s/h included). **c.** Daughter is 41 inches tall and a charming barefooted lassie. Her yarn hair is trimmed with satin ribbons. 353425 $170.00 (Members $153.00) (s/h included). **d.** Baby is 14 inches long and ideal for even the smallest child to love. 353433 $25.00 (Members $22.50) (s/h $1.00).

2. A SHADE UMBRELLA to protect you from the midday sun. The umbrella from Thailand bears a traditional design on its 80 inch diameter oiled paper canopy. The folding frame is made of sturdy bamboo and stands a full 8 feet high. It is ready to shade a patio or lend a feeling of the outdoors to a special room of your house. 353300 $40.00 (Members $36.00) (s/h 3.00).

3. A VICTORIAN BENCH is a welcome addition to any picnic. The golden pine slats are held by black cast iron so that it is suitable for indoor or outdoor enjoyment. Shipped knocked down for easy set up. Bench measures 48 × 27½ × 22 inches. 353987 $165.00 (Members $148.50) (s/h 15.00).

4. OUR PICNIC CLOTH AND NAPKINS will make it possible for you to have a Picnic on the Mall wherever you go. Our artist's rendition of the Mall shows today's national green from the Washington Monument to the Capitol. The silk-screened cloth measures 54 × 44 inches and has a bright blue backing. Each of the six 17 inch square napkins has a fanciful illustration of one of our Smithsonian museums on the Mall. Napkins and cloth are made of polyester and cotton muslin and are machine washable. Table Cloth: 353441 $27.50 (Members $24.75) (s/h 1.75). Set of six napkins: 353458 $17.50 (Members $15.75) (s/h 1.00).

5. A PICNIC BASKET to take wherever you please. Our basket is made in New England of hand splint ash that has been oiled to deepen the color of the wood. It measures 19⅞ × 11⅝ × 8¾ inches, a size just right for carrying the provisions of the day. 353938 $35.00. (Members $31.50) (s/h 1.00).

Smithsonian highlights

A Valentine gift to the Institution

Never mind that the sapphire isn't the proper birthstone for February. The choker-length, 309-carat necklace soon to go on display in the Museum of Natural History's Hall of Gems is a year-round bedazzler. The piece, a recent gift from Evelyn Annenberg Hall, consists of 42 beautifully matched sapphires from Sri Lanka (209 carats in all) which are embellished by 500-odd smaller diamonds. The necklace (right) was assembled by the late Harry Winston, the Fifth Avenue jeweler who donated the 44.5-carat Hope Diamond to the Smithsonian in 1958. Last year Mrs. Hall's sister, Janet Annenberg Hooker, gave the national jewelry collection a 75-carat emerald brooch ("Mall," December 1977).

Southeast of the Mall, on Martin Luther King jr. Avenue, is the Smithsonian's Anacostia Neighborhood Museum, founded in 1967 to aid in the "recovery and preservation" of black history and culture. This being Black History Month (it's always in February because that's when Abraham Lincoln and Frederick Douglass were born), the museum has mounted a major show, "Out of Africa: From West African Kingdoms to Colonialization," which opens February 4 and continues for one year. The exploitation of the African peoples in the New World—what John Wesley once called "that execrable sum of all villainies"—is a strong and tragic theme, starkly dramatized by such objects as the slave manacles (opposite page).

Smithsonian museums

Arts and Industries Building
"Discover Puppets!"—Washington Dance Theatre continues through February 11; Shadow Box Theatre (February 14-25), a colorful shadow puppet presentation of traditional African folktales (box office: 202-381-5395). Discovery Theater.

The Holmes Stereoscope

Invented in 1859 by Oliver Wendell Holmes, our **hand-crafted Stereoscope** is a handsome reproduction of his famous instrument.

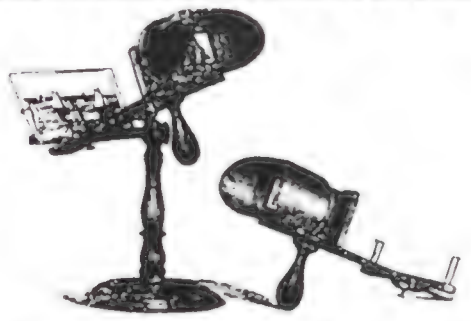
It is superbly made of **solid wood,** with a rich walnut finish. All fittings are **solid brass** and a silk screened design embellishes the velvet-edged, brass hood. The Holmes Stereoscope makes a decorative addition to any home.

This Victorian Masterpiece is your window on the past. You, your family and guests will enjoy **62 lifelike 3-D pictures** taken between 1859 and 1920. See gold miners on the Chilkoot Pass, Times Square in 1859, visit the Paris World's Fair, see the Cardif Giant, the San Francisco earthquake, Buffalo Bill, peek at Victorian risque, and **MUCH, MUCH MORE!**

You may use additional views which you may find in dusty attics, cellars and antique shops.

The optional pedestal display base has a spun brass pedestal, a wood base with a felt bottom and a museum-type brass plate which says:

The Holmes Stereoscope
Invented 1859
by Oliver Wendell Holmes



A full supply of the Holmes Stereoscopes - the most popular form of instrument - with the improvements which have been added by Mr. Bates the manufacturer, will always be for sale at wholesale and at retail.

These Stereoscopes, originally suggested by Dr. Oliver Wendell Holmes, and highly recommended by him, are unequalled for seeing Stereoscopic Pictures to the best advantage. The shade for the eyes excludes all external and surrounding light, and the sliding rest allows an adjustment to any focal distance required by near or far sighted persons.

24 HOUR SERVICE –
for Master Chg, Visa/Bank Amer., or C.O.D.
CALL NOW, TOLL FREE—800-824-7888
Ask for Operator No. 7-S02
In California — 800-852-7777
In Alaska and Hawaii — 800-233-7919

OR: Fill out this coupon and send it with your check, money order, or Master Charge or Visa/Bank Americard account number.

YOU LOVE IT OR YOUR MONEY BACK!
STEREO CLASSICS STUDIOS
145 Algonquin Parkway
Whippany, New Jersey 07981

☐ In your stereoscope set you get: 1. The hand-crafted Stereoscope, 2. 62 old-time 3-D views, and 3. The booklet, "The Story of the Stereoscope", **ALL FOR $19.95** plus $1.50 postage and handling. $

☐ The optional pedestal display base is only $6.95.

☐ P.S. If you already have a stereoscope, the 62 views and the booklet alone are only $6.95 plus $1.00 postage and handling.

Sub-total

NO RISK!
YOU LOVE IT
OR YOUR MONEY BACK!

Sales tax, where applicable

TOTAL $

☐ Payment enclosed Charge my: ☐ Master Charge ☐ Visa/Bank Americard

Name _____ Acct. No. _____

Address _____

City _____ State _____ Zip _____ Exp. Date _____

Signature (required for charge card orders) _____

Slaves who tried to run away were locked in these manacles.

Freer Gallery of Art

• "Chinese Paintings from the Ming Dynasty" (through April 13)—Seventeen paintings from the collection.

• "Landscapes of Muromachi Monks: Images and Words" (February 13, 8:30 P.M.)—With Professor Yoshiaki Shimizu, University of California, Berkeley.

Museum of Natural History

• "Birds of Prey: Paintings by Louis Agassiz Fuertes" (through March 18)—Thirty watercolors by the pioneering bird artist.

• "Butterfly Magic" (February 19, 5:45 and 8:15 P.M.)—A verbal dissection of the butterfly's miniaturized problem-solving brain mechanism (size of a pinhead) by Michael Emsley, biology professor at Virginia's George Mason University. Museum's Baird Auditorium.

• Mexican Masks (February 22 through 1979)—These 185 spectacular masks, on display for first time, are a new acquisition of the museum.

National Air and Space Museum

• "Shadows" (February 3, 8:45 A.M.)—Monthly sky lecture looks at a partial solar eclipse, which much of the United States should experience on February 26.

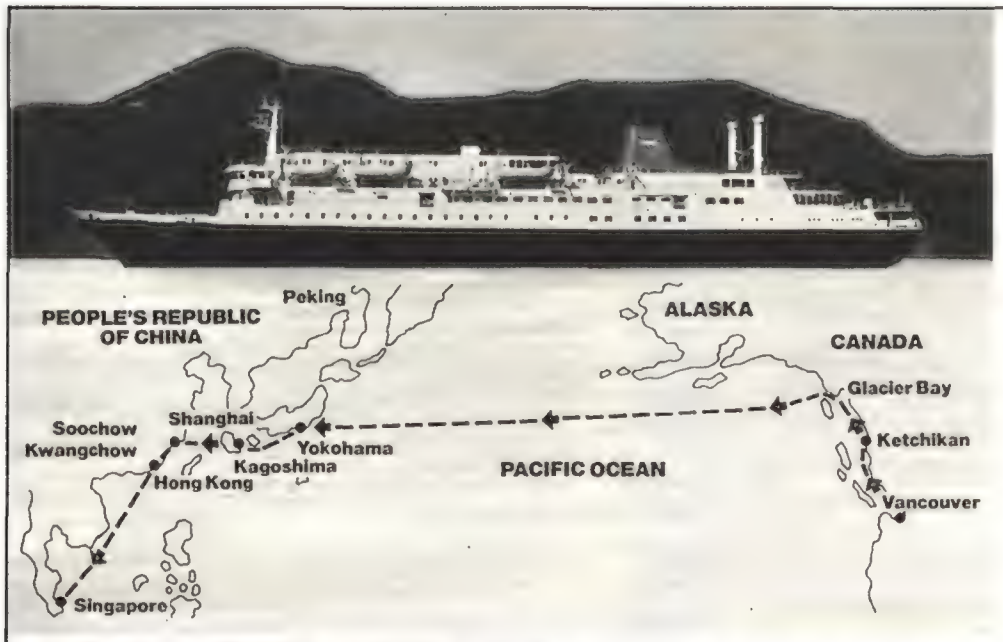
• "The Active Universe" (February 21, 8 P.M.)—E. Margaret Burbidge, Professor of Astronomy, University of California, San Diego, and international authority on the characteristics of stars and galaxies—particularly quasars.

Smithsonian Division of Performing Arts
(box office: 202-381-5395)

• Carla Hubner (February 3 and 10, 5:30 P.M.)—Two complementary programs of French piano music, performed by a highly acclaimed young pianist from Washington, D.C. Both dates in the Hirshhorn Auditorium.

• "Sun Ock Lee" (February 4, 8 P.M.)—The bright colors and enchanting spirit of Korean dance. Natural History's Baird Auditorium (free demonstration, February 3, 3 P.M., Baird).

• "Romantic Chamber Ensemble" (February 11, 8 P.M.)—Music of 19th-century composers Hummel, Brahms, Loeffler, Schubert and Fauré. Baird Auditorium.



27-day cruise departing October 2, 1979.

HONG KONG, CHINA, SINGAPORE, JAPAN, ALASKA

Free return air fare from Singapore to the West Coast! Sail from Vancouver to Singapore...spend 27 days on the m.s. Prinsendam, famous for Holland America courtesy, service, and cuisine.

The grandeur of Alaska, the mysteries of Asia...yours in one extraordinary cruise-vacation itinerary. First, cruise to Alaska's Inside Passage and breathtaking Glacier Bay. Then, it's...

Across the Pacific to Yokohama, Kagoshima, Hong Kong, and Singapore. For 3 days, explore the beauties of ancient Shanghai and Soochow, or, take the...

Optional 7-day tour to Peking and Kwangchow, the People's Republic of China (limited participation). Cruise ends October 29 in Singapore. Including free return air fare to the West Coast, rates per person, based on double occupancy, and subject to availability, range from $3,235 to $4,530.

Connecting 14-day Indonesia Cruise returns to Singapore on November 12. Take both cruises and fly free from your home in the U.S. or Canada to Vancouver; then back home from Singapore. Extended Orient Tours available. Details? See your travel agent or mail in the coupon. m.s. Prinsendam: Netherlands Antilles registry.

Holland America Cruises 79TP2-79
2 Penn Plaza, New York, N.Y. 10001

Tell me more about your '79 Orient/Alaska Cruise and connecting 14-day Indonesia Cruise.

Name_____

Street_____

City_____ State_____ Zip_____

My travel agent is_____

Holland America
Orient/Alaska Cruise

Come Behind-the-Scenes at the Smithsonian!

Make plans now to enjoy a popular new program with its wealth of outstanding speakers, unique museums and collections at the Smithsonian and elsewhere in the greater Washington, D.C. area. Choose from these opportunities combining lectures and field trips to get "behind-the-scenes":

ASTRONOMY OF THE ANCIENTS—MARCH 25-30

Leading authorities and well-known writers who are attracting widespread attention in the rapidly growing field of archaeoastronomy discuss the intriguing discoveries and hot debates concerning ancient peoples' sophisticated knowledge of the sky. Illustrated lectures include monumental Stonehenge; the Egyptian pyramids; the temples, cities and other impressive stone alignments of the Mayans; the methods of the skillful Babylonians and the early American Indians.

FRENCH IMPRESSIONIST PAINTING—April 1-6

Well-illustrated lectures and in-depth tours of the great works of Monet, Degas, Renoir, and other masters in the outstanding collection of the renowned National Gallery of Art.

HISTORIC HORTICULTURE—April 29-May 4

Tours of major 18th-20th century horticultural sites in full bloom in and around Washington, D.C., coordinated by the Director of the Smithsonian's Office of Horticulture with an emphasis on the current approach to design and maintenance in today's economy. Activities at Mount Vernon, the Smithsonian, Hillwood (the former home of Marjorie Merriweather Post), Dumbarton Oaks, and the world-renowned du Pont estates of Longwood and Winterthur Museum Gardens with the horticulturist or landscape superintendent of these unique sites; as well as demonstrations by famous designers of historic floral arrangements (repeat of popular program).

THE ARTS OF JAPAN—May 20-25

Major artistic traditions of Japan including pottery; architecture of temples, shrines, palaces and imperial tumuli; painting and sculpture from prehistoric times to the present with particular emphasis on the impact of Shinto, Buddhism, China, Korea, and the West in the formation of Japanese taste. Includes tours of the outstanding Freer Gallery of Art, as well as a tea ceremony at the Embassy of Japan, and special events focusing on Japan today.

MAN'S QUEST FOR WINGS: A HISTORY OF FLIGHT—June 3-8

The wonders of aviation through the eyes of the eminent curators of the National Air and Space Museum, the most popular museum in the world. Tours at the museum and a day at Silver Hill (NASM's preservation, restoration, and extensive storage facility) give participants the opportunity to view the world's finest collection of aircraft, spacecraft, missiles, rockets, scale models, and many unique items of memorabilia pertaining to famous inventors, airmen, astronauts, and events (repeat of popular program).

HISTORIC HOUSE PRESERVATION: HOW TO—June 3-8

Nationally known preservation experts share their special expertise in lectures and tours of famous Georgetown, Alexandria, and outstanding private and historic properties of the National Trust for Historic Preservation.

GENEALOGICAL RESEARCH: HOW TO—June 10-15

Taught by the Dean of American Genealogy, Milton Rubincam, Marilyn Duncan, and other leading authorities, participants learn how to conduct research in major repositories such as the National Archives, Library of Congress, and D.A.R. Library.

CHINA: A CULTURAL HISTORY—June 10-15

Prehistoric China to the enigmas of today, with emphasis on intellectual and artistic traditions and the great philosophies and religions. Includes recent films and tours of the important collection of the Freer Gallery of Art.

Please send requests for full program information and accommodations by seminar title to: **Selected Studies,** National Associate program, A & I 1190, Smithsonian Institution, Washington, D.C. 20560 or call (202) 381-6434 for details.

- "Andrew White" (February 11, 6 P.M.)—Known for his interpretations of John Coltrane, among others, and himself one of the saxophone virtuosos of our time. Hirshhorn Auditorium.
- "Jim & Jesse and the Virginia Boys" (February 25, 8 P.M.)—Sky-high harmony from the McReynolds brothers, bluegrass favorites. Baird Auditorium.
- "Morton Subotnick"—Lecture-demonstration (February 26, 8 P.M.) and concert (February 27, 8 P.M.)—The contemporary Los Angeles composer-performer of electronic music—the first one to record it. Hirshhorn Auditorium.

Membership benefits when visiting the Smithsonian

- Associates' Reception Desk, the castle. Open 10 A.M.-4 P.M. daily for registration, event-exhibit information and special Associate orientation publication.
- Associates' Lounge, the castle. A quiet place to relax, and open 10 A.M.-5:30 P.M. daily.
- Members' Dining Room, "The Court," Museum of Natural History. Open for lunch 11 A.M.-3 P.M. Monday-Friday; breakfast, weekends, 8:30-11 A.M. and brunch 11 A.M.-3 P.M.
- Discounts on all museum gift shop purchases.

For pre-visit information packet, send a postcard or phone Associates' Reception Center, Smithsonian Institution, Washington, D.C. 20560 (202-381-6264). Allow two weeks for receipt.

Musical Weekend in May

The eighth annual Musical Weekend, sponsored by the Smithsonian's Division of Musical Instruments and the Friends of Music, is scheduled for May 4-6. Hotel accommodations for two nights and all meals are included. For further details and reservations write: Musical Weekend, Room 4123, Museum of History and Technology, Washington, D.C. 20560.

Radio Smithsonian

This music-and-conversation program is broadcast weekly on approximately 50 stations across the country. For local times, consult your public radio station (program differs for Washington, D.C.):

- "Jesse Owens—Self-Portrait" (week of February 4)—Reminiscences with the distinctly non-Aryan hero of the 1936 Berlin Olympics.
- "The Man of Independence" (week of

February 11)—Richard Kirkendall, one of the foremost Truman scholars, takes a look at our 33rd President.

• "The Chinese Zoo Story" (week of February 11)—A peek into Chinese zoos and breeding prospects for our giant pandas.

• "The 1978 Festival of American Folklife, Part I" (week of February 18)—Highlights of the people and music of last year's festival, including Mexican-Americans, oil and coal workers, and watermen and residents of the Chesapeake Bay area; "Part II" (week of February 25).

Smithsonian National Associate Regional Events Program

This program, organized to benefit the vast majority of Associates who live well beyond Washington, D.C., travels to Atlanta February 13-21. Highlighting the week-long series of events will be lectures on geology, horticulture, archaeology and art, folk-music performances and papier-mâché sculpture workshops for young people. If Associates in Atlanta area have not yet received invitations, they should telephone 202-381-6491.

Smithsonian Institution Traveling Exhibition Service

SITES circulates exhibitions to hundreds of cities throughout the United States. To sponsor a show in your community, write to Eileen Harakal, SITES, Smithsonian Institution, Washington, D.C. 20560. Here are some February openings:

• Fort Collins, Colorado (February 3-March 4)—"Oliphant: Paintings and Cartoons," Colorado State University.

• Grange, Connecticut (February 10-March 11)—"Coast to Coast Coasters," Brunswick School (SMITHSONIAN, August 1977).

• Athens, Georgia (February 4-March 4)—"The Human Form: Fritz Wotruba," University of Georgia Museum of Art.

• Boston (February 17-March 18)—"Rails of the World: Paintings by J. Fenwick Lansdowne," Museum of Science.

• Worcester, Massachusetts (February 3-March 4)—"Images of Old Age in America," Worcester Polytechnic Institute.

• Laurel, Mississippi (February 3-March 4)—"African Artists in America," Lauren Rogers Library and Museum of Art.

• Ithaca, New York (February 3-March 18)—"Louis M. Eilshemius: Selections from the Hirshhorn," Herbert F. Johnson Museum of Art (SMITHSONIAN, November 1978).

• Chipinque, Mexico (February 10-March 11)—"Exhibition Flight: Barnstorming, Air Racing and Aerobatics," Alfa Cultural Center.

MR. JACK DANIEL hardly ever used these old labels. But, we believe, they have plenty of good uses today.

Our founder maintained that what went in his bottle was more important than what went on it. So he only used these beautiful labels for a few special bottlings. Today, of course, folks put them on countless things — from table tops to lampshades to bar trays. And we'd be glad to send you a set if you'll drop us a line. We're certain you'll find them useful. Even if Mr. Jack never did.

CHARCOAL MELLOWED
DROP
BY DROP

Tennessee Whiskey • 90 Proof • Distilled and Bottled by Jack Daniel Distillery
Lem Motlow, Prop., Inc., Lynchburg (Pop. 361), Tennessee 37352
Placed in the National Register of Historic Places by the United States Government.

Exploring the World with the Smithsonian

For both the seasoned and would-be traveler, the Smithsonian has developed a travel program to meet a variety of tastes and budgets. In order to accommodate the increasing growth and interests of Smithsonian Associates, the tour programs have expanded, bringing travelers to places reflecting the Institution's interests.

Domestic Study Tours

Smithsonian Sampler Weekend—Tour of Smithsonian museums with curators and staff, including private viewing of gem collection. Three weekends planned in February and March.

Mississippi—April 19-26: The history and architecture of Jackson, Vicksburg and Natchez with local preservationists.

Big Bend—April 21-28: A nature tour of this Chihuahuan Desert wilderness park in southwest Texas.

History of the Federal City—May 16-20: Trace origins and development of nation's capital with visits to historic houses and districts, plus behind-the-scenes tour of Congress in session.

Chicago—May 24-28: Discover the architectural treasures of this vibrant city.

Magnificent Tetons—June 1-11: Hikes, field trips through the national park in cooperation with Teton Science School.

Shenandoah—June 2-9: Study the geology, archaeology and botany of these beautiful Virginia mountains.

Connecticut Antiques—June 17-24: Visit museums, special collections, historic houses, private homes and noted dealers.

Family Folk School—June 30-July 6: A creative, family-oriented week of crafts, dancing, music at J. C. Campbell Folk School in the mountains of western North Carolina.

Montreal/Quebec—June 30-July 8: Lectures, museum visits and walking tours trace the development of French culture in North America.

Collegiate Peaks of Colorado—July 28-August 6: Base camp nestled in alpine basin near Continental Divide provides ideal setting for environmental education.

Alaska—July 30-August 6: The serenity and natural wonders of Mt. McKinley National Park at Camp Denali, a wilderness retreat.

Pinewoods—September 4-9: British and American folk dancing and singing at rustic camp near Cape Cod.

Washington "Anytime" Weekend: Choose any weekend to visit original Smithsonian building, spend two nights at Loew's L'Enfant Plaza or Hyatt Regency hotels, each close to the Mall, and see other sights in city by Tourmobile. Reservations and payments must be received at least ten days prior to arrival.

Brochures on specific tours are available. Write to address below.

Foreign Study Tours

Himalayan Cultures—March 21-April 15: Delhi, Agra, Calcutta, Darjeeling, Nepal (including tigers and Everest viewing), and Bhutan for a five-day exploration.

Greek Islands Cruise—April 22-May 3: Sail on the chartered M/V *Neptune* with a limited number of Associates. Visit ancient sites on Aegean islands, circumnavigate the Peloponnesus, sail through the Corinth Canal and stay in Athens.

Copenhagen to Lisbon—August 17-September 3: Cruise on MTS *Argonaut;* transit the Kiel and North Sea canals; sail upstream on the Seine, Loire and Gironde rivers, with special visits to northern Spain and Portugal.

Foreign Charter Tours

The Bavaria of Ludwig II—April 8-23: The fantastic architecture created for Ludwig II, builder of the fairy-tale castle of Neuschwanstein and patron of Wagner. Sample Munich's museums and cultural life; travel through the Bavarian Alps and up the "Romantic Road" of Gothic towns and castles; visit Wagner's Bayreuth, center of music and culture.

The Wild Highlands of Scotland—May 3-19: In cooperation with Aigas Field Centre, based in Victorian castle, explore magical scenery of central Highland glens. Evening lectures provide background for special hikes and field study of wildlife and natural history.

Paris and the French Countryside*—May 14-28: Museum lectures, walking tour of the islands of the Seine and excursions to Chartres and Malmaison plus a choice of a week-long travel seminar to Burgundy, Provence, or Normandy and Brittany.

Russia*—May 20-June 3: Leningrad, Tallinn and Moscow; see the Hermitage and Tretyakov Museums, the palaces of Pushkin or Petrodvorets, the ancient Kremlin with its old churches and Armory Museum; life-seeing visits to schools, factories or clinics; attend the best of Russian theater and circus.

Trans-Siberian Express—June 4-26: Fly from Seattle to Tokyo for tour on steamer to Nahodka; train to Khabarovsk, Irkutsk and Lake Baikal. Choice of four seminars: Samarkand, Bukhara and Tashkent; the cities of Old Russia; Outer Mongolia and the Gobi Desert; or the full Trans-Siberian experience.

Midsummer Night*—June 19-July 5: Tour begins in Rovaniemi, Finland, on Arctic Circle, ends in Helsinki. Celebrate year's longest day, travel through Lapland to mountains, fjords of northern Norway, go by coastal steamer to North Cape.

Scotland*—September 9-23: Edinburgh and beyond—a program of walking tours and special visits to castles, abbeys, battlefields and archaeological sites.

Oxford/Smithsonian Seminar—September 14-29: Select from unique curriculum taught by Oxford University faculty and live in Worcester College. Lectures, field trips and special seminars utilize rich resources of the town and university, the Ashmolean Museum and Bodleian Library.

Sultans' Treasures*—September 28-October 7: An adventure tour to Istanbul and Asiatic Turkey and a cruise on the Bosporus. Separate excursions to Aegean Turkey, or Anatolia and Cappadocia.

Spain*—September 30-October 14: Madrid and day excursions to Toledo or El Escorial. Week-long travel to the Basque country and Barcelona, Andalusia and Córdoba, or Santiago de Compostela.

Low cost tours includes first-class hotels, most meals, sightseeing, lectures, theater tickets, air fare. *Indicates optional predeparture course will be available.

Write Smithsonian Associates Travel Program, A&I 1278, Smithsonian Institution, Washington, D.C. 20560 or call (202) 381-5635.

New Sounds from the Smithsonian Collection.

The Exuberant Sound of Jelly Roll Morton.

Music of Jelly Roll Morton for Solo Piano, Trio, Quartet, and Septet.
Recorded live at the Smithsonian, the Dick Hyman Ensemble (featuring Bob Wilber) captures the vibrant music of the first great jazz composer. *Including:* The Pearls • King Porter Stomp • Wolverine Blues $7.98 ($7.18 — Smithsonian Associates)
Also available: Piano Music of Ferdinand "Jelly Roll" Morton, played by James Dapogny $6.98 ($6.30 — Smithsonian Associates)

The Sparkling Sound of Broadway.

Whoopee
Eddie Cantor, Ruth Etting, and George Olsen's band and singers are all here on this reconstruction of Ziegfeld's Wild West extravaganza. The musical program is almost complete, including an overture. *Including:* Love Me or Leave Me • Eddie Cantor's Automobile Horn Song • Makin' Whoopee! $6.99 ($6.30 — Smithsonian Associates)
Also available: Souvenirs of Hot Chocolates; Oh, Kay!; Ziegfeld Follies of 1919; Anything Goes; Lady, Be Good! Each album, $6.99 ($6.30 — Smithsonian Associates)

The Elegant Sound of Ellington.

Duke Ellington/1940
1940 was a year when, as Gunther Schuller once put it, Ellington seemed to produce a masterpiece per week. The third double album in our Ellington reissue series. *Including:* Ko-Ko (2 takes) • Concerto for Cootie • Never No Lament • In a Mellotone • Jack the Bear • Warm Valley • and 25 more! A 2-LP Set, $9.99 ($9.00 — Smithsonian Associates)
Also available: Duke Ellington/1938; Duke Ellington/1939. Each 2-LP Set, $9.99 ($9.00 — Smithsonian Associates)

The All-Time Favorite.

The Smithsonian Collection of Classic Jazz
The incomparable 6-record jazz survey that highlights five decades of recorded jazz — from a Scott Joplin piano roll performance of *Maple Leaf Rag* to John Coltrane's *Alabama.* A 6-LP Set, $29.95 ($26.95 — Smithsonian Associates)

THE SMITHSONIAN COLLECTION

Order Form

Name _____

Address _____

City _____ State _____ Zip _____

Stock No.	Quantity	Title	Price
1006		Music of Jelly Roll Morton	
1003		Piano Music of Morton	
2014		Whoopee	
2012		Souvenirs of Hot Chocolates	
2011		Oh, Kay!	
2009		Ziegfeld Follies of 1919	
2008		Lady, Be Good!	
2007		Anything Goes	
2015		Duke Ellington/1940	
2010		Duke Ellington/1939	
2003		Duke Ellington/1938	
2100		Collection of Classic Jazz	
		Postage and Handling	$ 1.49
		Total Amount	

I am ☐ am not ☐ a Smithsonian Associate ☐ Bill me
☐ Payment enclosed (Payable to "Smithsonian Institution")
☐ Send me The Smithsonian Collection catalogue

Mail to:

Smithsonian Recordings
P.O. Box 10230

In every discipline, there is one definitive statement of quality...

One of the rewards of personal achievement is to be able to enjoy true freedom of choice. To be able to select whatever meets your own high standards, without compromise.

Nowhere is this choice more clear-cut than among fine 35mm cameras. If you seek the one with a record of accomplishments beyond all others, you want the Nikon F2A.

Nikon cameras have achieved the overwhelming preference of today's foremost photographers. They have accompanied astronauts into space, explorers to the highest peaks on earth, and scientists to the depths of the ocean. The camera that pictures the events of our time for virtually all major U.S. newspapers and quality magazines is, in fact, the Nikon F2A.

But, the best reason for buying a Nikon F2A now is the inexpressible feeling of satisfaction that comes when you possess what is unquestionably the finest 35mm camera ever created.

Your Nikon dealer will be glad to demonstrate the distinguished Nikon F2A and its even more sophisticated F2AS version. You will find him in the Yellow Pages. Or, write for details to Nikon Inc., Dept. N-38, Garden City, New York 11530.

Subsidiary of Ehrenreich Photo-Optical Industries, Inc. In Canada: Nikon Div. Anglophoto Ltd., P.Q.

Nikon

For some, only the best is good enough.

© Nikon Inc. 1978

By S. Dillon Ripley

State of the Smithsonian: the Secretary's annual report

More help for conservation, more steps to make sure our household is in order

In a year of uncertainty, two important facts have been reemphasized to us at the Smithsonian: first, we have a moral responsibility to speak out for conservation; and second, time is not quantifiable to most Americans. Of course we can speak of time, but—at least in Washington—it tends to be measured in very short spans: two years, for example, the interval between Congressional elections; at the longest, Washington time may be measured in terms of one administration—four years. Who dares dream of six or eight is greatly daring, and can only dream.

If time itself is measured in such short terms, how can we speak of conservation? This past year we have been advocating the creation of a "support center," most especially for the National Museum of Natural History on the Mall. That building is chock-a-block with cases of specimens which the public does not see; they are stacked in the corridors and crammed into corners behind the scenes. And the cry is for more and ever more storage space. This is the typical fate of a museum, especially a working museum with a large and productive staff.

The anthropologists are there with all their trappings of present or past cultures. There are other scientists, the study of whose collections may unlock secrets for us in the future: invertebrates, corals, insects by the million, geological specimens, larger animals of all kinds. The museum long ago outgrew its appropriate storage capacity.

The problem with speaking about conservation, in almost any rational terms, is that the subject is one that most people always want to put off—next year, the year after. Museums have traditionally tended to neglect conservation, so busy have their curators been acquiring things; it is far more exciting to collect than it is to conserve what we already have.

Curator Dennis J. Stanford in an overcrowded area of the Natural History Museum

Yet year by year textiles wear out, paper crumbles, glass decomposes chemically, bronze becomes "sick" with its own strange disease, other metals rust or corrode, wood crumbles into dust. It all happens gradually, but at an ever-increasing rate. These objects that we possess are all we have of history, the history of ourselves, the history of the planet. And so every fragment is precious to us as a testament to creativity, to the impress of culture and civilization on our history, and its example for ourselves.

For that reason we have spent ten years planning the support center mentioned above, and for the better part of ten years have been pressing our case with the Congress. At last, in the session just past, we have had hearings, planning money has been awarded, and the budget offices have approved. The site is ours already, 30 minutes away in Suitland, Maryland, and the plans have now been so refined that we feel sure that they are the best for the money.

The eventual creation of this resource should not only provide greatly expanded exhibition space in the Museum of Natural History, but also give us an invaluable extension of our work in conservation, not only for the Smithsonian collections but also for training conservators in the mu-

The new Under Secretary, Michael Collins, in his office in the castle

seum field. There are only three places in the United States where such training is effectively given at present; the American Federation for Conservation of Historic and Artistic Works has only 1,200 members, not all of whom are engaged, full time, in the more complex research or practical activities of this highly demanding profession. New conservators coming into the field may replace those who retire, but these retirements leave us with a scarcity of seasoned, experienced persons. Although they are attempting to stem the vast tide of slow deterioration, the labors of Hercules pale by comparison.

Just as the Smithsonian is concerned with the preservation of artifacts—objects made by the hand of Man—so we must be concerned with natural objects and the evidence that *they* represent. Ecology is the study of the relationship of organisms to their environments. For years ecologists rather placidly have been tabulating natural phenomena, in order to develop principles for understanding the gradual changes in the environment under whatever conditions of climate and of terrestrial or aquatic setting in which they may occur.

Today ecologists are desperately trying to catch up with the changes wrought by mankind—the proliferation of chemical compounds, the release of oil, nuclear activities and the destruction of forests, especially in the tropical zones of the world. Ecologists thus seem to be driven to measuring changes brought about by people rather than by nature. This is not the way the science began, nor is it the healthiest way of proceeding.

Environmental impact studies are largely fruitless unless performed over a period of years, but we are too impatient for results to be able to afford the extra time. Short-term studies, for the most part, cannot be rigorous in an ecological sense. How, then, can we possibly develop answers for the long haul? It is easy to care about our own possessions—our house, our cave—and we can also fight for our allotment, our quarter-acre, but can we bring ourselves to feel responsible for all of nature in the context of time? It is incumbent on us all to do so, now that we know for the first time how we have tipped the scales.

A museum keeps a tally of extinction. The Smithsonian maintains the National Herbarium. Also, five years ago we were charged with developing and maintaining a list of endangered plants of the United States. We can tell how many plants already have become extinct in the last hundred years, and of those how many disappeared in the last 25 compared with the preceding 75. We can do the same for a number of animals as well.

The rate of extinction is a matter of the deepest concern. It means that our environment is becoming impoverished. The diversity of species is a measure of the tolerableness of the environment. Impoverishment means an increasingly harsher atmosphere and space in which to live. And so, at the very moment that population pressure is increasing relentlessly, the world is being robbed of some of those very expectations on which our future may depend.

If in this past year we have been preoccupied with the concept of conservation, how have we been facing the immediacy of life in Washington? We have been assessing our management, making sure that our household is in order. In the last two years this management has been evaluated during

our appropriations requests to the Congress, with accompanying echoes in the press. There have been reviews of the Institution's operations by the General Accounting Office (GAO) and by the Audit and Review Committee of the Board of Regents.

In response to these studies, a number of actions have been taken by the Board of Regents and the staff of the Institution over the past year. We have, for example, developed alternative administrative procedures for the research and education programs previously administered by the Smithsonian Research Foundation. The Foundation itself is in abeyance.

The matter of the future status of the Smithsonian Science Information Exchange, including its organizational placement, was referred to the Office of Management and Budget (OMB). By the end of the year, it appeared that the OMB and the Congress had agreed to transfer the Exchange to the Department of Commerce as a more appropriate affiliation, in view of that Department's other responsibilities for the management of technical data.

Full information to OMB, Congress

Concerning other matters raised by the GAO, the Institution has strengthened its procedures for providing full information to the OMB and to the Congress on the source and expenditures of grant, contract and trust funds at the time that federal budgets are submitted.

Actions also are well along on all the recommendations in the Regents' Audit and Review Committee report. Among other things, a policy of seeking specific authorization for all significant new programs and projects involving the use of federal funds is in effect. Furthermore, a procedure has been adopted providing for review by the Regents, or their Executive Committee, of any research awards which might be perceived by the Congress or the public as inappropriate.

Subsequent to the GAO review, and while the Audit and Review Committee study was in progress, the Appropriations Committee of the U.S. House of Representatives decided that a further examination of the Institution's statutory authority, accountability to Congress, and policies and practices in administering and funding programs would provide useful information to the Committee and to the Congress. The report recommended that the Committee consider legislation or specific appropriations language defining the status of the Smithsonian Institution as a federal instrumentality with accountability, as a federal agency, for all funds, both federal and private, and defining the status of private-roll employees with respect to coverage by federal employee benefit programs.

Thomas Lawton, new head of the Freer

Implementation of the recommendations would appear to help establish the Institution's status and to assure full and timely information and accountability to the Congress. But we explained that we foresaw problems in actions that would change the status of our trust-fund employees, given the well-defined personnel management system under which these employees now work and our complete willingness to make all financial and personnel information available for review.

We feel most strongly that efforts that might result in a change of the Institution's character would have serious consequences with regard to the public's perception of the Institution, and their continued generosity in supporting it with important objects for the national collections, with gifts and bequests of funds for special and unrestricted purposes, and with support through the Associates program.

The investigative staff recommended that the Board of Regents publish a set of bylaws containing specific thresholds for management discretion in Smithsonian Institution programs and projects, and specifying the authorities vested in the Executive Committee as well as the full Board of Regents. This study also recommended that the appointment of members of the Board of Regents be limited to 12 years, or two consecutive terms, to increase Regent participation. At its September meeting, the Board of Regents gave preliminary consideration to the matter of bylaws, and also requested the Regents to consider whether they wished to prescribe a limitation on terms of service of the nine citizen Regents to two six-year terms.

Throughout, ungrudging cordiality

This period of scrutiny of the Institution's policies and operations has been most helpful. It has afforded us opportunities to examine and strengthen some of our procedures. The explanations that we have provided the Congress have helped to clarify the nature of the Smithsonian. We are proud of the manner in which the Congressional committees, their staffs and our staffs have shared in looking at this great Institution, and in suggesting, positively and affirmatively, ways in which our services to the public can be maintained and even improved.

It is a measure of our popularity that these reviews have been so searching. It is a measure of our success that the spirit of these reviews, while thorough, has been so ungrudgingly cordial. We can do no less than be aware of the special responsibility borne by all in the Smithsonian to live up to this charge. We can do no less as keepers of America's testament.

During the past year there have been many changes in the organization of the Institution. An important appointment to the central staff has been that of Michael Collins, formerly director of the National Air and Space Museum, as Under Secretary of the Institution. Additionally, Thomas Lawton has been appointed director of the Freer Gallery of Art, to succeed our late beloved friend, Harold P. Stern, whose untimely death resounded through the field of Oriental art.

With regret we accepted the resignation of Brooke Hindle as director of the National Museum of History and Technology. He had helped most effectively in piloting that institution through the rigors of the Bicentennial. Silvio Bedini, deputy director of that Museum, has resigned in order to assume the position of Keeper of Rare Books of the Institution. The chairman of the Department of History of Science, Otto Mayr, has efficiently assumed the post of

acting director of the Museum of History and Technology, while the innovative deputy director of the Museum of Air and Space, Melvin Zisfein, has taken on the acting directorship of that Museum.

Gretchen Gayle Ellsworth has been appointed director of the Office of Fellowships and Grants, a link of primary importance with our academic colleagues across the country. In a cognate activity, we greatly welcome the appointment of the Very Reverend Francis B. Sayre jr., formerly dean of the Washington Cathedral, as associate director of the Woodrow Wilson International Center for Scholars. We have lost a co-worker and gained a Washington colleague in the appointment of Peter Marzio, formerly curator of graphic arts at the Museum of History and Technology, as director of this city's Corcoran Gallery of Art, an important post for which he is highly qualified. Similarly, John Dobkin, our very effective administrative officer of the Cooper-Hewitt Museum in New York, has left us for the significant post of director of the National Academy of Design; and John Whitelaw, the administrative officer of NASM, has left to become deputy chairman for management at the National Endowment for the Humanities.

Two of the important galleries of the Institution celebrated tenth anniversaries during the past year. Both are in the same building, the old Patent Office. Their opening date was in 1968, although the National Collection of Fine Arts has been around, in various locations, since the beginning of this century. The National Portrait Gallery, only chartered in 1962, has had similarly ten years of visibility in this noble, handsomely renovated building. Both museums, the one a stimulating panorama of American art, the other one of the most important historical documentation centers in the nation, share with the Archives of American Art what has now become a very crowded building indeed.

We have earnestly requested the General Services Administration, the cultural advisers of the President and our Congressional friends for assistance in recognizing this problem, for which a perfect solution lies at hand: the Greek Revival building directly across F Street, presently the home of the International Trade Commission. If connected by underground tunnels, this building could serve as an ideal museum and curation area, and we earnestly hope that a suitably dignified game of musical chairs can be played to find a new home for our friends of the International Trade Commission.

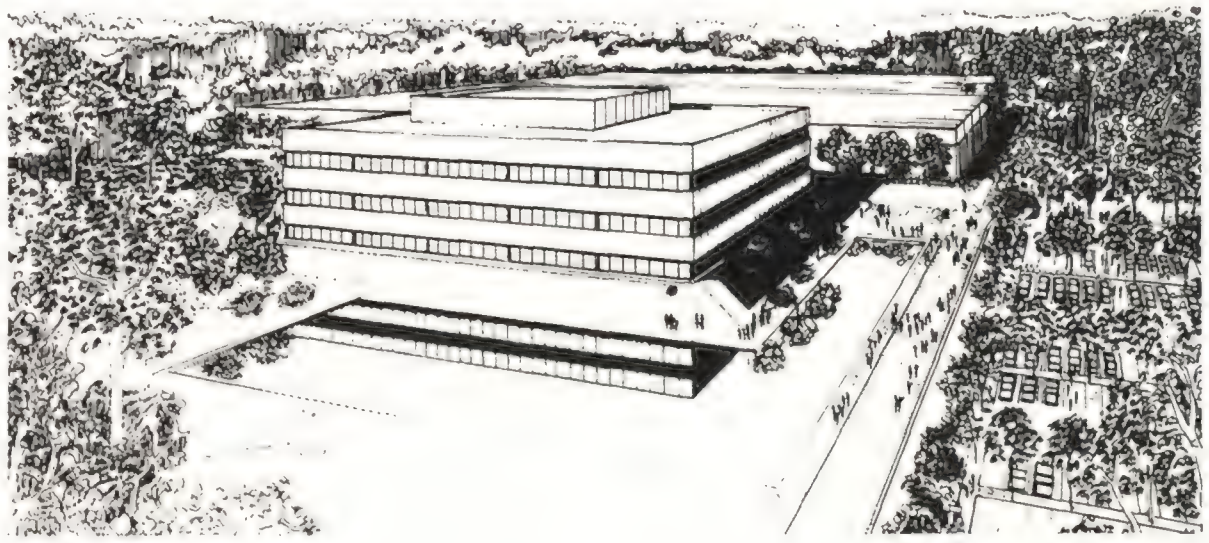
In all our museums this has been a year of vibrant activity in exhibitions, from the Renwick Gallery with its innovative craft exhibits to the Museum of Natural History/Museum of Man with its thrilling exhibition of Mexican archaeological art and artifacts dating from prehistory to Colonial times. The Cooper-Hewitt has had three major exhibitions, and at the same time has received numerous awards for the renovation of the splendid Carnegie house as a museum. The Hirshhorn had two major exhibitions of great quality, while the Museum of History and Technology opened its new Maritime Hall, and the Museum of Natural History completed its hall on the beginnings of urbanization and the rise of Western civilization.

Important acquisitions by gift and purchase rained in upon us this year, not least of which was the gift of a major part of *Double Eagle II,* the first balloon that managed to cross the Atlantic with three intrepid passengers. Appropriately, it came to rest in our National Air and Space Museum, which celebrates the history of ballooning so effectively as part of the history of human flight. In April 1784, General George Washington wrote to one of his wartime colleagues, the French engineer L. Du Portail, regarding balloon aeronautics (for the French were the leaders in this field at the time): ". . . I have only newspaper Accts. of the Air Balloons, to which I do not know what credence to give; as the tales related of them are marvellous, and lead us to expect that our friends at Paris in a little time, will come flying thro' the air, instead of ploughing the Ocean to get to America. . . ." A foresighted thought, for our General was merely 194 years ahead of his time.

A third ten-year anniversary has been that of the Anacostia Neighborhood Museum, which celebrated with exhibits, an open house and continued enthusiastic local support as well as national recognition.

A major step in reinforcing our understanding of the decline of human environments on the planet has been the work of Farouk El-Baz, research director in our National Air and Space Museum. Through his interpretation of photographs from space (SMITHSONIAN, June 1977) it is now possible to map the advance of deserts in the arid regions of the world, and to locate possible arable land that might be saved from encroachment. So important is this work that the Egyptian President, Anwar Sadat, has requested that Dr. El-Baz serve in an adjunct capacity as science adviser to that government, a position we are delighted to endorse.

Years ago, Mark Twain, in his *Innocents Abroad,* characterized us as the recipient ". . . of seeds and uncommon yams and extraordinary cabbages and peculiar bullfrogs for that poor, useless, innocent, mildewed old fossil the Smithsonian Institute [sic]. . . ." Come then, in 1978, to our Victorian Garden south of the original castle building, where there are purple and green ornamental cabbages surrounding the new statue of Spencer Fullerton Baird, second Secretary of the Institution, and see how old, useless and mildewed we are. I daresay there is not a better example of persistent style in all Washington than this fossil-studying Institution, Mr. Clemens!



This is a preliminary conception of the new museum "support center."

See all of Shakespeare's plays on TV.

Made possible by Exxon Corporation, Metropolitan Life Insurance Company and Morgan Guaranty Trust Company of New York.

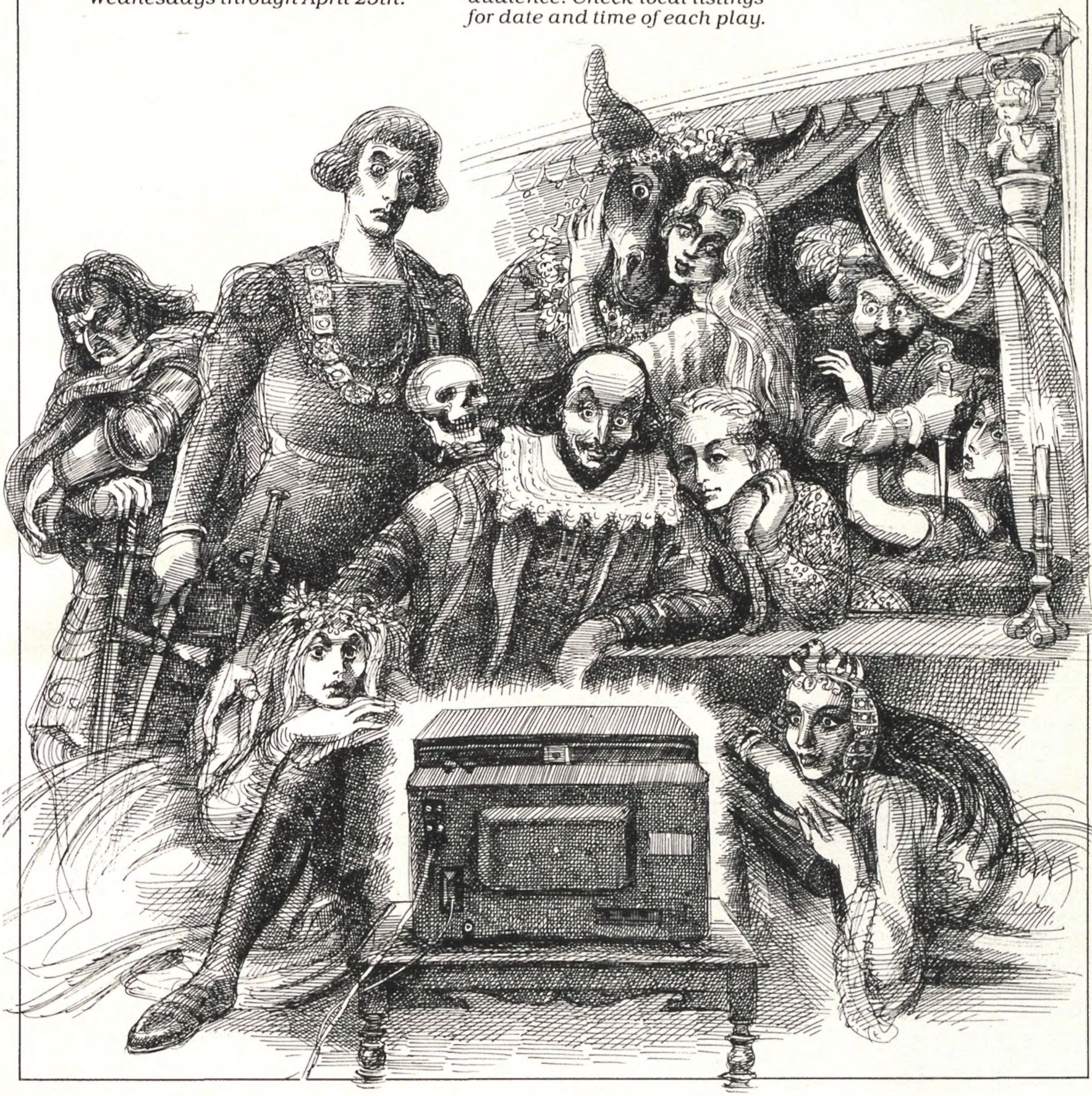
For the first time ever, all 37 of Shakespeare's plays are coming to American TV. This project is so vast, it will take six years to complete.

The first season's plays will be "Julius Caesar," "As You Like It," "Romeo and Juliet," "Richard II," "Measure for Measure," and "Henry VIII." You can see them on your local public television station starting Wednesday evening, February 14th, and on alternate Wednesdays through April 25th.

The stars of these first six plays include Sir John Gielgud, Dame Wendy Hiller, Claire Bloom, Derek Jacobi, Celia Johnson, and Keith Michell.

"The Shakespeare Plays" is a co-production of BBC-TV and Time-Life Television. The plays will be presented on American television in the spirit in which they were first conceived—as entertainment. Be a part of Shakespeare's biggest audience. Check local listings for date and time of each play.

THE SHAKESPEARE PLAYS



By Patrick Ryan

Where's the fire? Let's hope at a bus stop

Saddened as I am by recent reports of our gallant firemen's occupational tribulations, it would come as no surprise if the more musical among them took up the choral complaint of the policemen of Penzance and declaimed melodiously that a fireman's lot is not a happy one. And at the head of their evidence would be the efforts of the Fire Department in New York to meet that city's austerity budget by suggesting that only the first crews dispatched to conflagrations should ride thereto on expensive fire engines. The backup crews, it was proposed in an attempt to save public money, should travel later by private cars, taxis or buses.

Which moved the former president of the firemen's union to predict that New Yorkers would have to prepare themselves for the surrealist spectacle of "half-a-dozen firemen in full battle gear" patiently lining up at a bus stop.

Consulted cab drivers pronounced that they wouldn't object to carrying spruce-clean firemen to the inflammatory scene, but certainly balked at bringing them work-worn back. "What woman in a white ball gown will want to sit in the back of my cab," said one, "if it's just been occupied by wet and sooty firemen?"

It may be some consolation to New York Fire Department chiefs to know that, in their economic predicament, they do not walk alone. Their fire-crew transport problem, albeit in microcosm, already has been met in Ireland by the official extinguishers of the Gort Town Council, County Galway. Financial stringency precluded the purchase of a bright-red, life-size fire engine with a built-in ladder up the back, and the best alternative that council funds could afford was a Land Rover. A vital item in their blaze-dowsing equipment, was, however, a 35-foot extension ladder.

"Our fire-fighting team consists of ten men," explained an unsatisfied councilor, and "no more than five of them will fit in beside the ladder"—leaving the dismounted other five to proceed to the emergency "by taxi or, if it is not too far away, by bicycle." When the fire chief tried packing seven aboard, it was found that the mobile quencher could carry only ten gallons of water, which really isn't very much to halt the towering inferno of a blazing shillelagh factory.

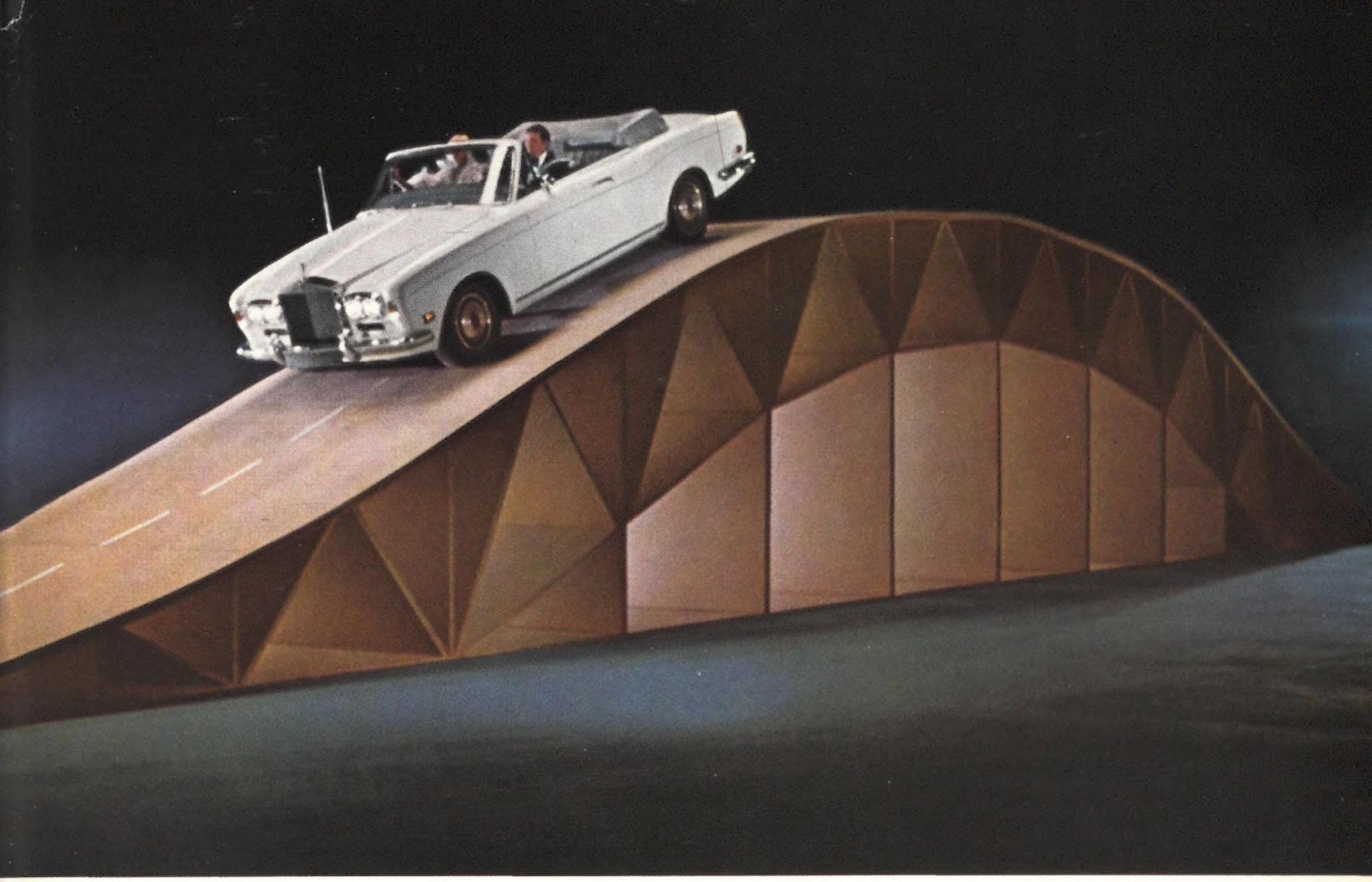
Civic provision of fire protection goes back, at least, to the Romans who instituted a brigade known as the *Vigiles*. But such organized forces disappeared with the fall of the Empire, and for centuries after, fire fighting in general remained a haphazard affair of individual exertions. Exemplified by the record that at the Great Fire of London in 1666, the only mechanical device available to combat the flames was "a large brass squirt requiring three men for its operation."

That salutary lesson doubtless prompted the setting up of the first fire insurance office in Britain in 1680 by a physician of Puritan stock lumbered with the name, If - Jesus - Christ - had - not - died - for - thee - thou - hadst - been - damned Barebones. When he opened his Fire Office—later renamed the Phenix—he changed his business name to Nicholas Barbon, probably to cut down on the expense of having to buy checkbooks spacious enough to accommodate his given name.

Nicholas formed the first British fire brigade composed, perhaps appropriately, of Thames watermen who turned out at the call of "Fire," but who only gave their quenching attention to houses which bore the metal emblem indicating that they were insured with the Phenix company. Rival companies would watch and, in some cases, deliberately obstruct fire fighters.

On the lines, possibly, of the reverent reinforcement enjoyed by the fire force of a Norfolk village where the parson has nobly signed on as a part-time fireman. "I get some funny looks," he admitted to a reporter, "when I arrive at a fire wearing a dog-collar and my fireman's uniform." Nevertheless, his presence in such clerical garb provides an extra line of quenching attack since, when a conflagration looks beyond all human control, he can have a last try by leading the crew in prayers for rain.

But it is doubtful, however, if even the presence of the hose-toting vicar could have intervened decisively in the predicament which beset the Liverpool Fire Brigade. The infinite variety of a fireman's emergency duties was epitomized in the report from Beatletown that a crew, "having driven their engine as near to the disaster area as possible, found that it was impossible to reverse out of the one-million-gallon pool of molasses that they had come to clear up." That, in technical fire-fighting terms, was coming to a definitely sticky end.



We drove this 2½ ton Rolls Royce over a bridge made entirely of St. Regis paper to prove a point.

The point is that paper can be stronger than you think. Especially if it's in the form of corrugated box material.

The roadbed of this bridge was made out of six layers of St. Regis triple-wall corrugated–a material we supply a lot of to the U.S. The verticals were made of five layers, and the triangles of four.

Triplewall is made up of three layers of the corrugated "medium" and four layers of linerboard. And it can withstand 1,100 lbs. per square inch of puncture pressure on its side. And on its edge, a 12 x 12 in. piece can take 930 lbs. A mere seven layers of paper!

The strength of corrugated isn't only in the paper itself. It's the structure. The shape of the medium is one of the strongest structures known. In Colonial Virginia walls were built in the corrugated, or serpentine form. And they're still standing today, although they're only one brick thick.

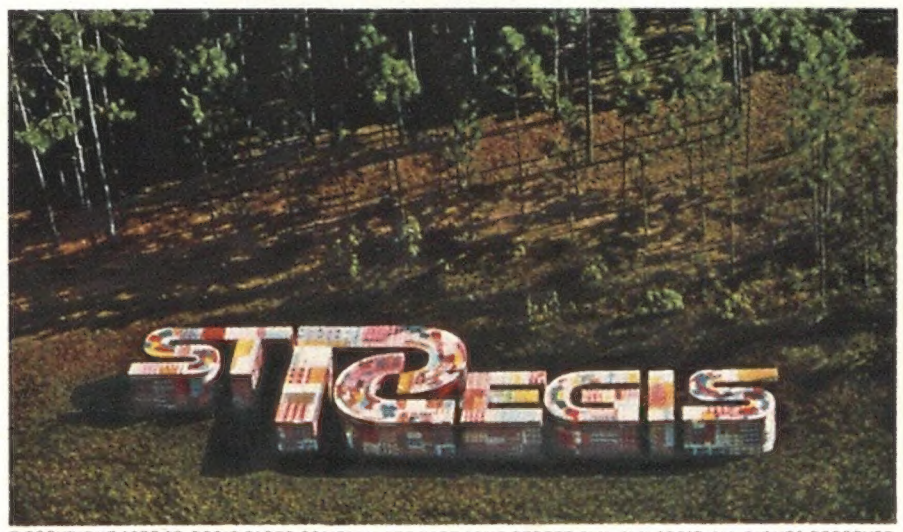
Corrugated box material is a sandwich. A wavy corrugated medium is squeezed between two rollers with meshing teeth. That's the meat of the sandwich. The bread is two layers of heavy paper called linerboard.

Since it was patented in 1871, corrugated has been one of the mainstays of the American distribution system. In fact, the corrugated box is one reason we have the most efficient distribution system in the world.

And St. Regis has had its share of innovations in the field. Partly because we're one of the largest makers of linerboard in the world. And partly because of our technology and marketing thrust.

All this reflects the marketing stance of St. Regis toward all our packaging, paper, lumber and construction products. To use the full weight of our technology in serving our markets and in renewing the forest resource our products come from.

St. Regis—serving Man and Nature.



©COPYRIGHT 1977 ST. REGIS PAPER COMPANY, 150 EAST 42ND STREET, N.Y., N.Y. 10017. ALL RIGHTS RESERVED.

SEAGRAM DISTILLERS CO., N.Y. BLENDED CANADIAN WHISKY. 80 PROOF.

It was a very good year.